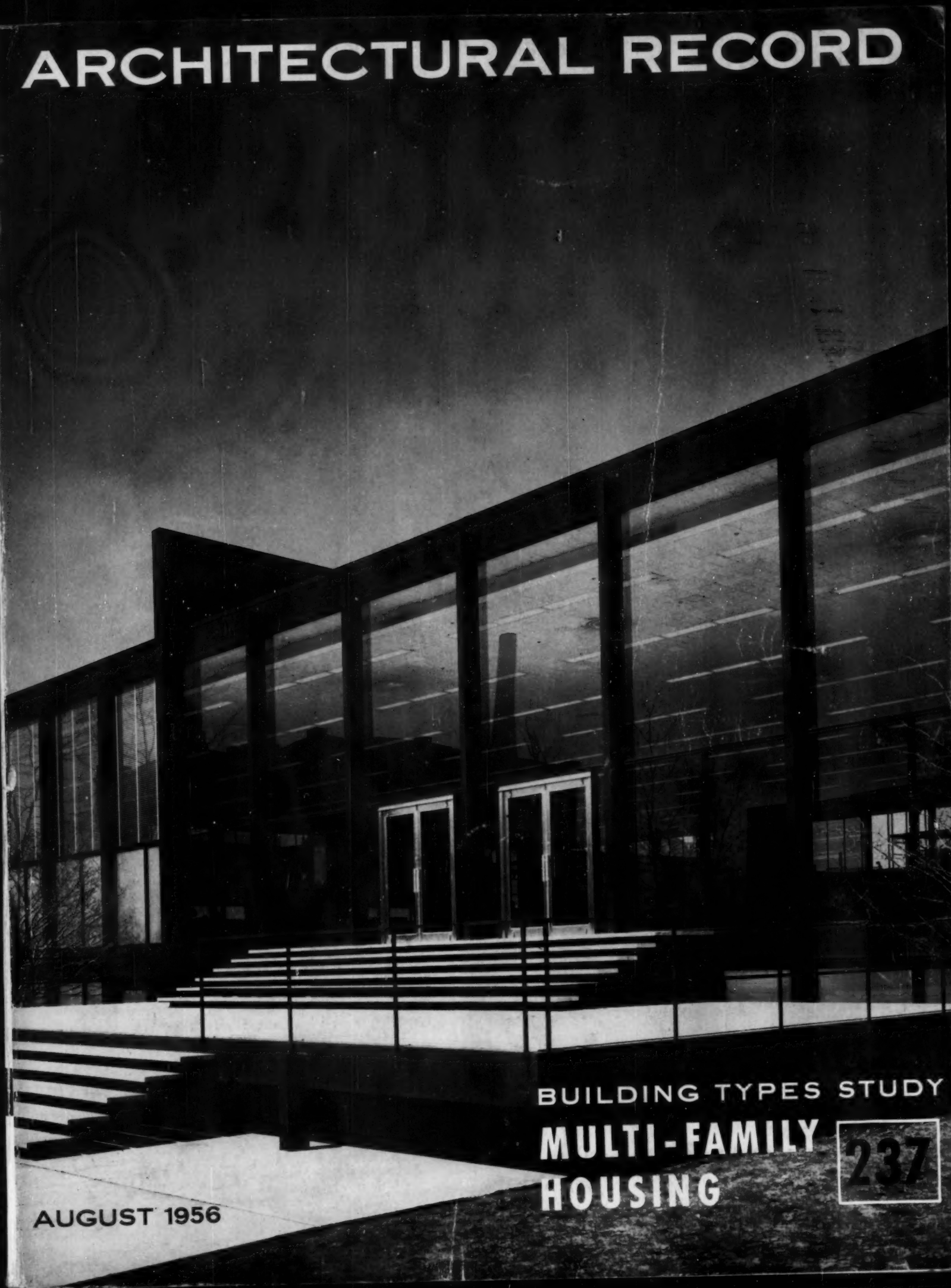
ARCHITECTURAL RECORD



BUILDING TYPES STUDY

MULTI-FAMILY HOUSING

237

AUGUST 1956

AT GIMBELS

in the Southgate Shopping Center...

unobtrusive, dependable

GRINNELL SPRINKLERS

Architects: GRASSOLD-JOHNSON ASSOCIATES
WELTON BECKET & ASSOCIATES

Grinnell Ceiling-Type Spray Sprinklers

Grinnell Quartzoid Bulb Spray Sprinklers

Distinctive, modern design, inside and out, plus effective store planning make Gimbels Southgate an attractive addition to Milwaukee's first suburban shopping center. The spacious, uncluttered interior was designed for shopping ease and comfort . . . as well as to make the most effective use of merchandising areas.

The Grinnell Sprinkler System, specified by the architects at the planning stage, also has been made a functional part of interiors. Notice particularly how the Grinnell Ceiling-Type Sprinklers are almost invisible; extend but a scant inch and a quarter from the ceiling — not marring the interior decor. The end-result is an unobtrusive, smartly planned fire protection system that fits so well into the store design. Yet, should fire strike, Grinnell Sprinklers stand ready to operate quickly — effectively, day or night, to stop fire at its source.

Call in a Grinnell Fire Protection Engineer when you design your next project. He can advise you on the best system to suit your requirements. There is a Grinnell System for every type of fire hazard. Write for literature. Grinnell Company, Inc., 269 West Exchange Street, Providence, Rhode Island.

GRINNELL

PROTECTION AGAINST EVERY FIRE HAZARD

Manufacturing, Engineering, and Installation of Fire Protection Systems Since 1870

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The Final Touch for finer homes...

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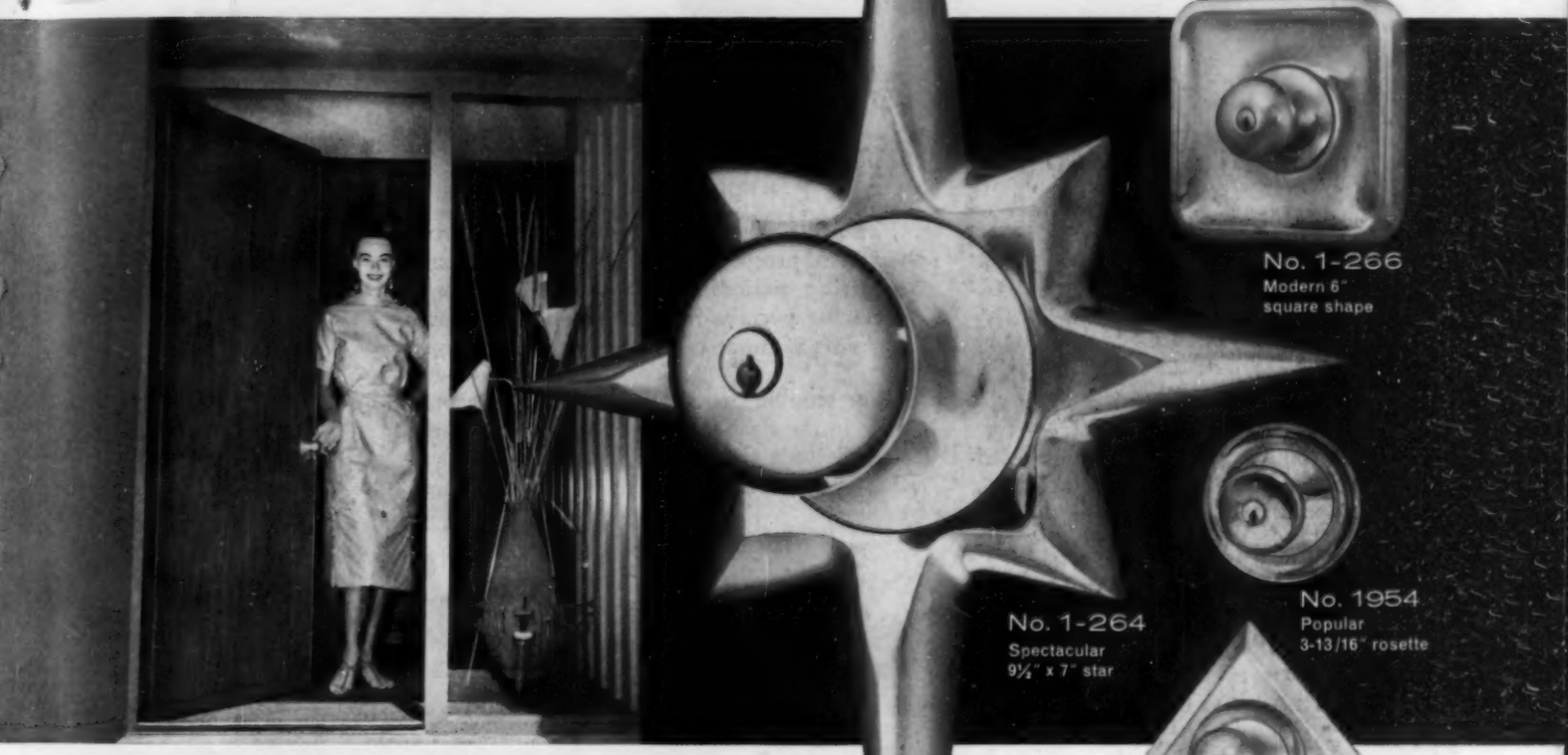
KWIKSET "600" LINE TRIM ROSETTES



No. 1955
Rich 5⅛"
concave rosette

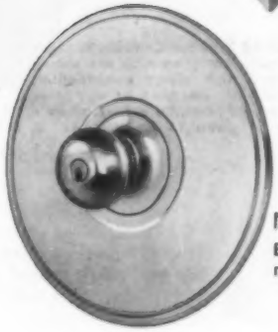
No. 1-262
Magnificent
8" deep
contour design

No. 1-266
Modern 6"
square shape

No. 1954
Popular
3-13/16" rosette

No. 1-264
Spectacular
9⅛" x 7" star

No. 1-265
Distinctive 8" x 6¾"
diamond design



No. 1-263
Elegant 8"
mirrored surface

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Watrous

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The *Self-Tightening Handle Packing* provides real protection against leakage without requiring periodic tightening. *Single-Step Servicing* permits removal of entire operating unit without taking valve off the line.

For trouble-free service and lasting economy in the flush valves you specify, be sure they include all of these features. No other flush valve combines them all like Watrous does.

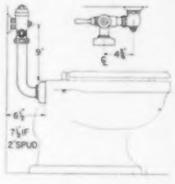
Watrous Water Saver Adjustment

To Prevent Back-Siphonage

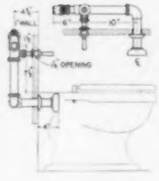
The Imperial Vacuum Breaker can be furnished on all Watrous Flush Valves. It provides important protection against pollution of pure water supply, is positive and silent in operation, neat and unobstrusive in design.

MOST POPULAR Watrous Combinations for service in multi-family housing are shown here. Watrous also offers combinations for concealed, foot operated or any other desired type of installation. Complete information is given in Catalog 449-A.

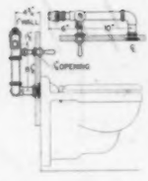
M-532 MAJESTIC (Diaphragm)
M-432 IMPERIAL (Piston)



M-533 MAJESTIC (Diaphragm)
M-433 IMPERIAL (Piston)



M-536 MAJESTIC — Left Inlet
M-536½ Right Inlet
M-436 IMPERIAL — Left Inlet
M-436½ Right Inlet



M-539 MAJESTIC — Left Inlet
M-539½ Right Inlet
M-439 IMPERIAL — Left Inlet
M-439½ Right Inlet

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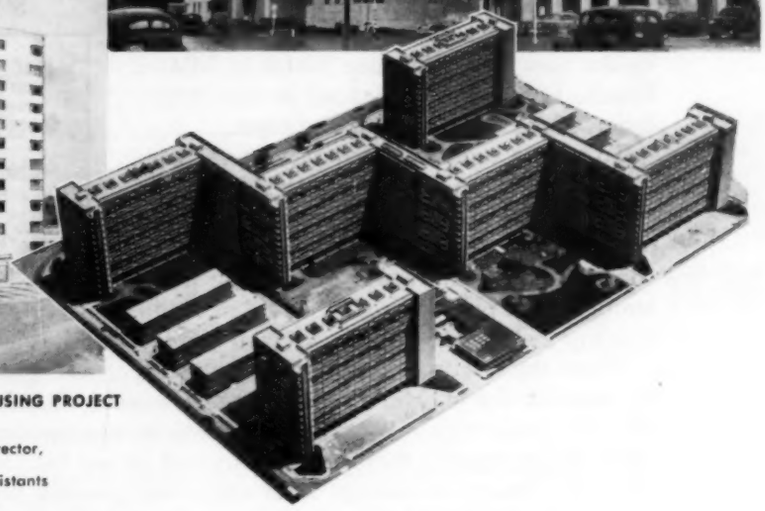
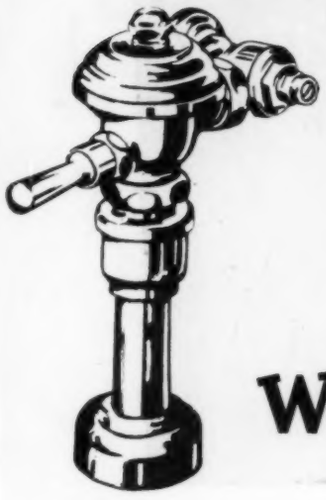
Shreve, Lamb & Harmon Associates, Architects
J. L. Murphy, Inc., Plumbing Contractors

GROSVENOR HOUSE, Seattle, Washington
Earl W. Morrison, Architect
Erwin L. Weber, Mechanical Engineer
Harfst-Hansen Co., General Contractor
University Plumbing & Heating Co., Plumbing Contractor

SHERIDAN SHORES APARTMENTS, Chicago, Illinois
Irwin G. Frederick, Architect and Engineer
W. E. Weitman & Co., Consulting and Mechanical Engineers
Welso Construction Co., General Contractors
Fettes, Love & Sieben, Plumbing Contractors





PRESIDENTE ALEMAN HOUSING PROJECT
Mexico City

Architects: Mario Pani, Director,
Jose de J. Gomez and
Jenaro de Rosenzweig, Assistants

Engineers:
Bernardo Quintana, C.E., General Manager
Raul Sandoval L., C.E., Assistant Manager
Arturo Baledon, C.E., Chief Engineer
Fernando Espinosa, C.E., Constructing Engineer

Plumbing Contractors:
Francisco Jimeno, C.E.
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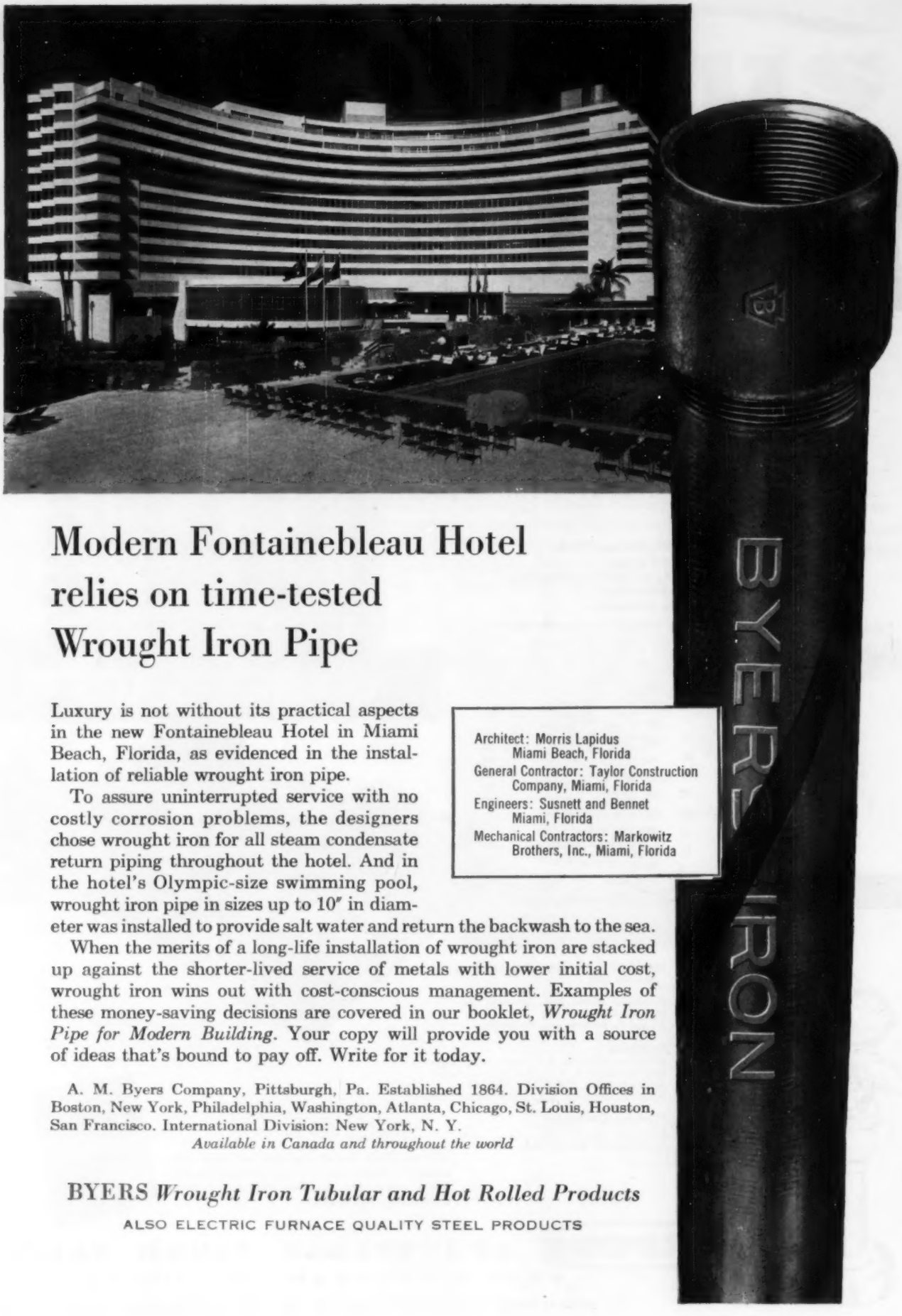

Modern Fontainebleau Hotel relies on time-tested Wrought Iron Pipe

Luxury is not without its practical aspects in the new Fontainebleau Hotel in Miami Beach, Florida, as evidenced in the installation of reliable wrought iron pipe.

To assure uninterrupted service with no costly corrosion problems, the designers chose wrought iron for all steam condensate return piping throughout the hotel. And in the hotel's Olympic-size swimming pool, wrought iron pipe in sizes up to 10″ in diameter was installed to provide salt water and return the backwash to the sea.

Architect: Morris Lapidus
Miami Beach, Florida
General Contractor: Taylor Construction Company, Miami, Florida
Engineers: Susnett and Bennet
Miami, Florida
Mechanical Contractors: Markowitz Brothers, Inc., Miami, Florida

When the merits of a long-life installation of wrought iron are stacked up against the shorter-lived service of metals with lower initial cost, wrought iron wins out with cost-conscious management. Examples of these money-saving decisions are covered in our booklet, *Wrought Iron Pipe for Modern Building*. Your copy will provide you with a source of ideas that's bound to pay off. Write for it today.

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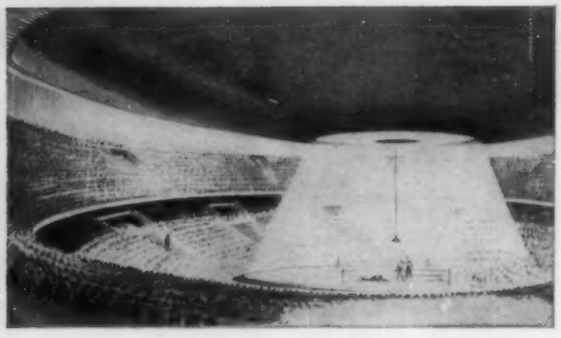
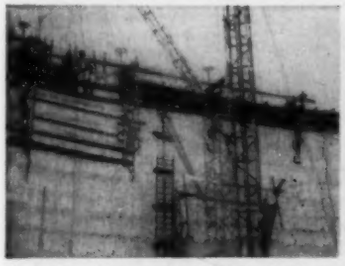
Breathtaking *isn't too strong a word...*



for this 83-ft.-high, 310-ft.-diameter concrete stadium, with 4-in.-thick wall and 850-ton suspended prestressed roof . . .



4"-thick wall was concreted with 'Incor', forms lifted daily. Roof is supported by cables extending from concrete ring atop wall to steel ring at roof's center.

Roof consists of 9000 concrete slabs 2" thick, hooked to cables; prestressed by overloading with brick, then concreting joints, later removing overload.

● Montevideo's cylindrical concrete stadium, to seat 20,000, is a masterpiece of simplicity and economy. Wall was built by lift-form method, using 'Incor'* 24-Hour Cement, produced by Lone Star's Uruguayan subsidiary, for speed, economy, quality.

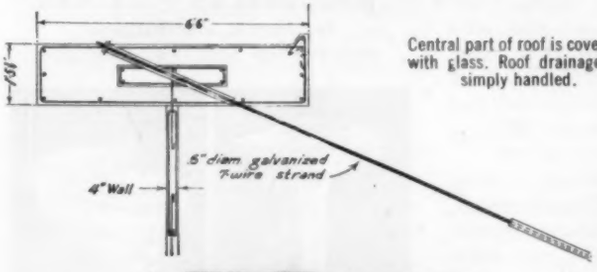
Roof, built without forms or falsework, is supported on 256 seven-strand cables, strung between a ring 6 ft. 6 in. wide and 1 ft. 5¾ in. thick, concreted around top of wall, and an 18-ft.-diameter steel ring at roof's center.

Working out from center, 9,000 precast concrete slabs, 2 in. thick, with reinforcing rods projecting laterally and shaped into hooks, were fastened to the cables. Roof was then prestressed by overloading 50%, placing concrete in slab joints, and removing overload after concrete had hardened.

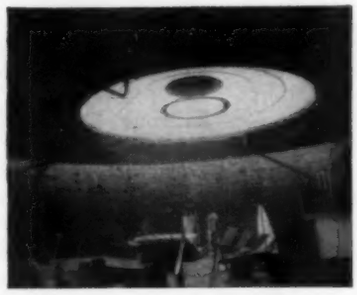
Central part of roof (65 ft. diameter) was left open and covered with glass, as was a strip next to wall, to provide light and ventilation and to minimize wind suction.

Talk about simplicity! Clearly, the designers solved their problems by taking fullest advantage of concrete's great flexibility and "doing what comes naturally".

*Reg. U. S. Pat. Off.



Central part of roof is covered with glass. Roof drainage is simply handled.



STADIUM, MONTEVIDEO, URUGUAY

Designed and built by:
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Consultants:
ALBERTO S. MILLER, C.E.
and
LUCAS RIOS
Architect

Consulting Engineers, Roof Design:
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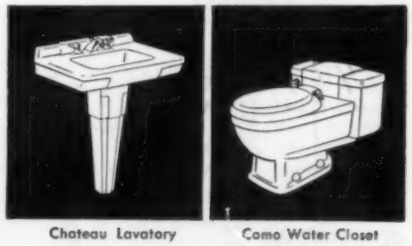

Chateau Lavatory — Como Water Closet

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THE RECORD REPORTS

PERSPECTIVES

Some testimony from One Who Renders — Hugh Ferriss — as given before an (mightily amused) audience at the Architectural League of New York earlier this year

THIS ESSAY is based on the realization that this gathering includes three kinds of people: (1) Renderers; (2) young people who want to be Renderers; (3) older people who are pleased that they are not Renderers.

To begin with, we need a definition of the word "Render." This is taken care of by Webster's New International which heads its list with the following two items: "RENDER. 1-a. To melt down; to extract by melting; as, to render lard. 1-b. To treat so as to extract the fat; as, to render garbage."

Now, as to the history of the word. Its earliest appearance is in a MSS. 1900 years old in the line, "Render unto Caesar the things that are Caesar's." The meaning here is obscure; you have to work it out for yourself.

To come down to the term "Architectural Rendering" as commonly understood today. An Architectural Rendering is when an Architect has a job, or thinks he has a job, and he has handed his client some blueprints of sketch plans and elevations for which, in accordance with A.I.A rules on sketches, he hopes to be paid some day; but unfortunately his client can't read blueprints so the Architect decides to give him a pretty picture in perspective showing how the building is going to look, or how it ought to be going to look; and the Architect could readily draw this picture himself because all Architects can draw beautifully in perspective; but unfortunately Architects are too busy to do any sort of architectural drawing, so he 'phones a party known as a "Renderer" ("One who, or that which, renders; a vessel for rendering lard") and he says to this Renderer, "Am sending over some blueprints; please deliver Rendering tomorrow first thing in the morning."

It is unnecessary for the Architect to ask the Renderer if he *wants* to render the particular subject because all designs by members of the A.I.A. are extremely beautiful and it is a privilege to render them; but from another angle things are not so hot. Money being the silent partner in artistic transactions, it is bad taste to speak of it out loud; but I deem it my duty to advise the young people present who want to become Renderers that however exciting the thing may be artistically, there is little chance of your rendering to an Architect a very exciting Bill. For the Renderer knows that the Architect knows all there is to know about Rendering; no use pretending the job is anything complicated or difficult. He realizes that to an Architect a Rendering is a sort of Valentine to give the client and that the Architect would toss it off himself if he had the time. Also, the practicing Architect is probably a personal friend.

In this situation the Renderer, at some point in his career, begins to ask himself some searching questions. Is an Architectural Rendering necessarily a Rendering made for an Architect? How about making it directly for the client? Suppose the client is Ford, G. E., G.M. or one of those outfits and they are promoting an X-million dollar building program; who is going to make more money out of those buildings, the big promoting corporation or their hard-working Architects? So why shouldn't the big promoting corporation pay for the pictures that aid in the promotion? Why should Architects expend hard-earned money on artistic gifts to well-heeled clients?

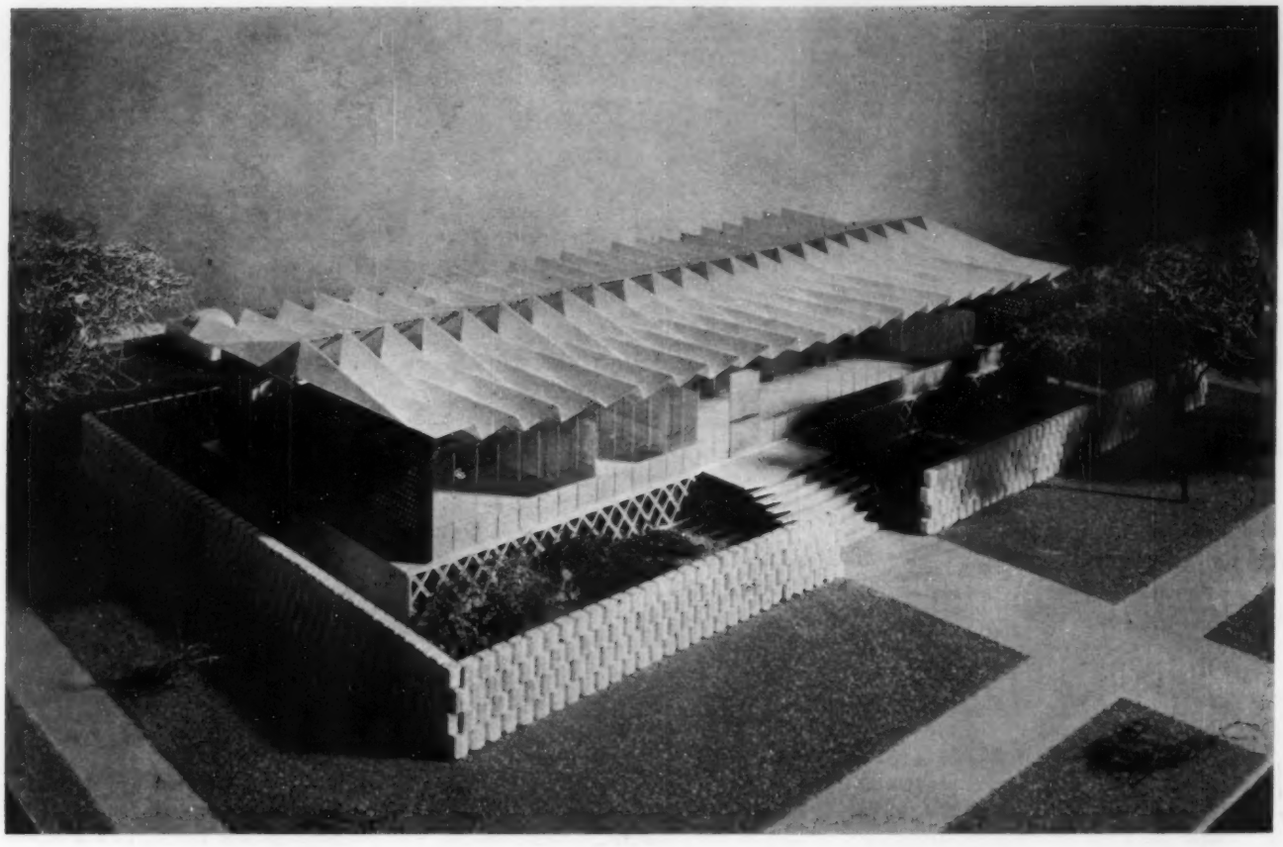
Also, hasn't the corporation got the Public Relations and Promotion departments which, in their hard-boiled way, damn well know the promotional value of well-made illustrations? And haven't they the ample budgets for just such items?

Besides, there's the Element of Mystery. I can vouch for the fact that not a single member of General Motors' Board of Directors knows how to make an Architectural Rendering; to them, the very idea of portraying something that doesn't exist has an element of mystery. The point is, you charge for the mystery.

Of course, even if the aspiring young Renderer meets, at the right club, the Corporation's 3rd Vice-President who, after his 3rd Vice Martini signs up for X-thousand dollars worth of mysterious Renderings, you probably will still have to deal, sooner or later, with the corporation's Architects of Record. It is very cultural to deal with Architects of Record but they have a bad habit of dropping into the studio "first thing in the morning" to explain to you how to make the Rendering. So my final advice on this phase is to make your Renderings in situations where no practicing Architects are even remotely involved. You can then make the building look like anything you want it to look like. And leave it to the client to find in due time some architectural firm that can make the building look like the Rendering.

Renderers are frequently asked to name their most amusing experience in the Rendering field. This is difficult because all experiences in the Rendering field are quite amusing. One day a small man resembling a jockey came into my studio, laid a brand new $100 bill on the drafting board

(Continued on page 312)



CONCRETE INSTITUTE PLANS A NEW (CONCRETE) HEADQUARTERS BUILDING

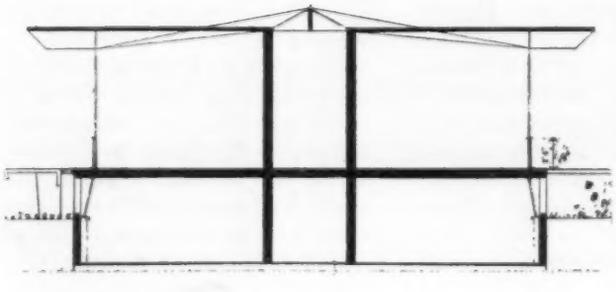
One of the requests made of architect Minoru Yamasaki by the American Concrete Institute was, not surprisingly, "to use concrete imaginatively" in designing a new headquarters for the institute.

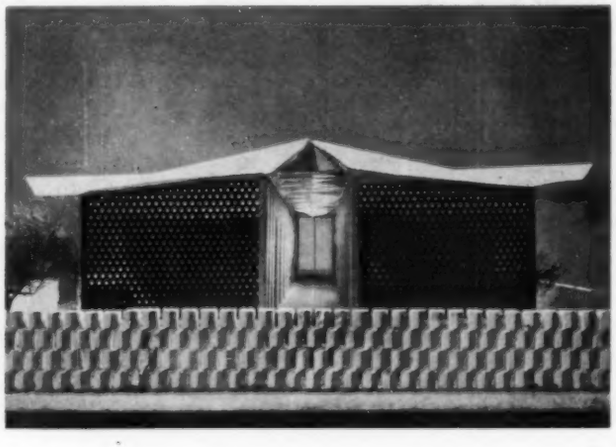
As projected, the building will have a folded-plate reinforced concrete roof cantilevered front and back from interior corridor walls, which will also be concrete. The roof will extend over the exterior walls to act as sun shields.

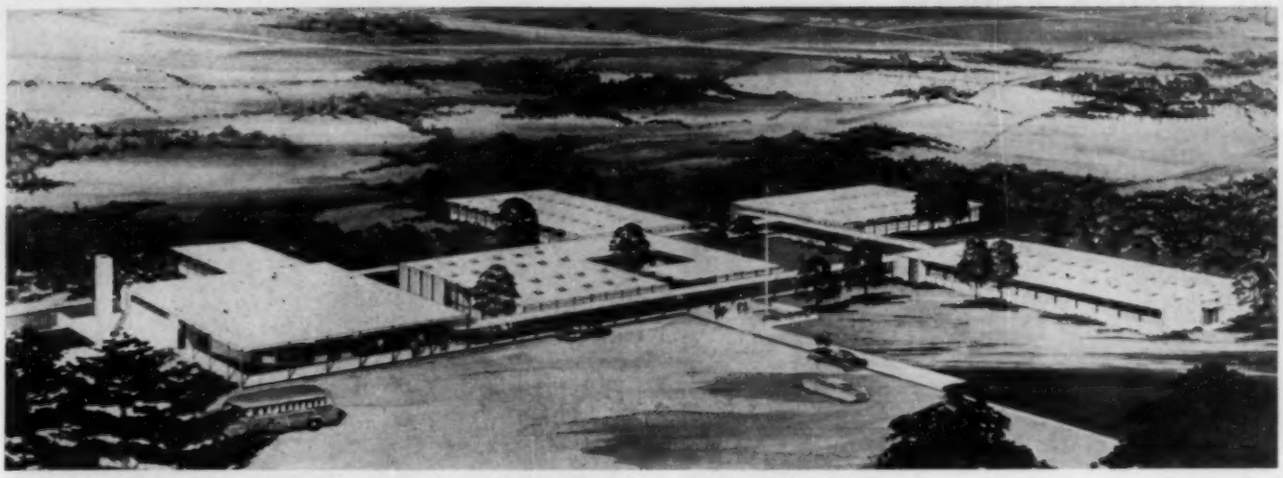
The exterior walls will be precast concrete panels and glass on the sides, while the end walls will have perforated screens made of colored pipe sections.

Inside, the building will house offices for the institute's secretary-treasurer, its technical director and its editorial staff, as well as facilities for getting out the organization's publications. The corridor will be illuminated naturally by a system of triangular skylights.

The building, which will be located in Detroit, is scheduled to get under construction in early 1957. It will cost an estimated $275,000.







Award of Merit with Special Commendation: Wilson Jr. High School, Mecklenburg County, N. C.; A. G. Odell Jr. and Associates, Architects, Charlotte, N. C.

HONOR AWARDS PRESENTED AT A.I.A. SOUTH ATLANTIC REGIONAL CONFERENCE

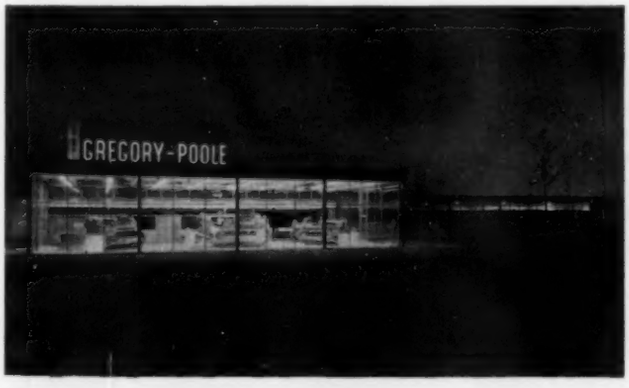
The Honor Awards Exhibit held in conjunction with the Regional Conference of the South Atlantic District of the American Institute of Architects was not, the program stressed, a competition. Entries were judged on their individual merits, and were honored for the "excellence of the architect's solution of problems encountered." At a luncheon held as part of the conference in April, certificates of award were presented to the owners, architects and general contractors of the buildings honored.

Serving as members of the jury were John Ekin Dinwiddie, A.I.A., Dean and Professor of Architectural Design at Tulane University in New Orleans; Charles M. Goodman, A.I.A., of Washington, D. C.; and Frank G. Lopez, A.I.A., senior editor of ARCHITECTURAL RECORD.

Award of Merit: Fraternal Order of Eagles Building, Atlanta; John Portman, architect, Atlanta

Citation: Parking Lot Office, Oklahoma City, Okla.; Joseph N. Boaz, architect, Raleigh, N. C.

Award of Merit: Venice-Nokomis Presbyterian Church, Venice, Fla.; Victor A. Lundy, architect, Sarasota

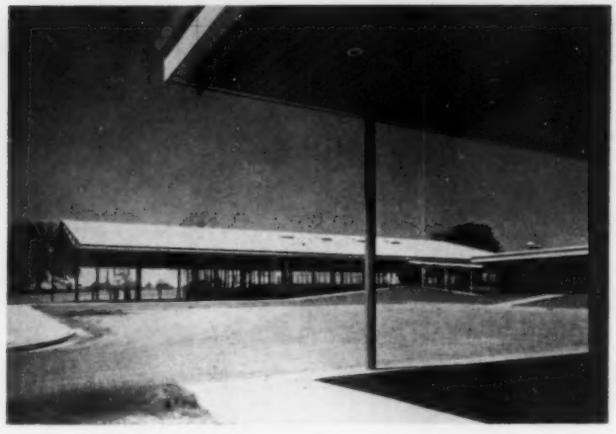


Award of Merit: Gregory-Poole Equipment Co., Raleigh, N. C.; G. Milton Small, George Matsumoto, architects, Raleigh, N. C.

Award of Merit: Samuel T. Lemer residence, Atlanta; John A. Portman, architect, Atlanta

(Continued on page 12)

(Continued from page 11)



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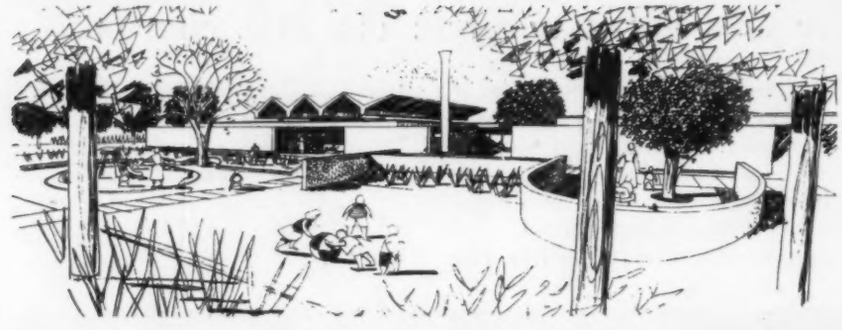


3

1. J. R. Moore Junior High School, Tyler, Tex.; Caudill, Rowlett, Scott and Associates, Architects. 2. Wilbert Snow Elementary School, Middletown, Conn.; Warren H. Ashley, Architect. 3. Kissam Lane Elementary School, Sea Cliff, N. Y.; Vincent G. Kling, Architect. 4. Hanover Park Regional High School, East Hanover Township, N. J.; Jay C. Van Nuys and Associates, Architects. 5. Bristol Primary School, Webster Groves, Mo.; Hellmuth Obata and Kassabaum, Architects

4

5

SCHOOL EXECUTIVE NAMES WINNERS IN ANNUAL COMPETITION

Five top winners, eight honorable mention citations for general excellence of design and seven "special feature citations" in its fifth annual competition for better school design have been announced by the magazine *The School Executive*. The top winners are shown on this page.

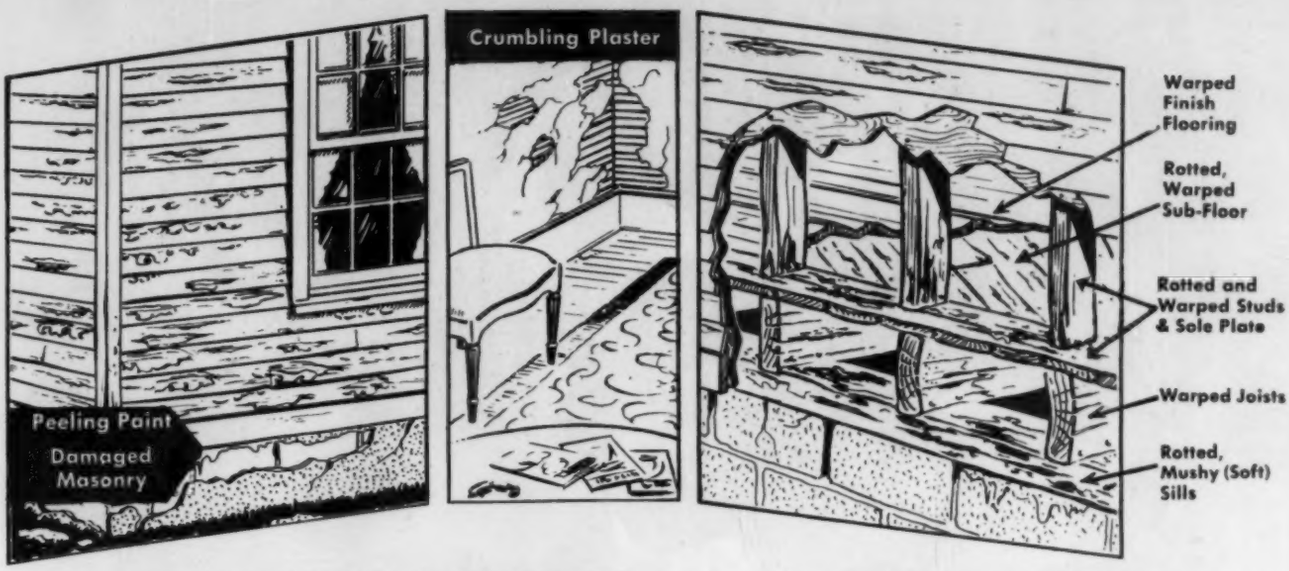
Architect Kenneth Gibbons of New York was professional adviser for the competition. The five-man jury included three architects, Samuel E. Homsey of Wilmington, Del. (chairman), Carl Guenther of Cleveland and Peter Tarapata of Detroit; and two educators, John E. Marshall of the Massachusetts School Building Assistance Commission, Boston, and Robert D. Murray, superintendent of Schools of Schenectady.

Honorable mention citations went to Hellmuth, Obata and Kassabaum, St. Louis; The Architects Collaborative, Cambridge; A. M. Kinney Associates, Charles Burchard, architect, Cincinnati; McLeod and Ferrara, Washington, D. C.; Caudill, Rowlett, Scott and Associates, Bryan, Tex.; O'Dell, Hewlett & Luchenbach Associates, Birmingham, Mich.; and (two) John Lyon Reid and Partners, San Francisco.

Recipients of "special feature" citations were Howard and Murphy, Butler, Pa.; John Carl Warnecke, San Francisco; Chapman, Evans and Delhanty, New York; Perkins and Will, White Plains; Daniel, Mann, Johnson and Mendenhall, Los Angeles; Vincent G. Kling, Philadelphia; and Douglas and Heims, Portland.

(More News on page 16)

More Destructive than Termites!



CONDENSATION WILL MAKE PAINT PEEL, PLASTER CRUMBLE, WOOD ROT, AND MASONRY AND MORTAR DETERIORATE.

Insulation which is not protected by an adequate vapor barrier can allow considerable water vapor to flow into ceiling, wall and floor spaces, where if it condenses it may cause damage. It causes millions of dollars in repair bills annually. Vapor is a gas with 1/205,000 the density of water at 32°F. It flows from high vapor density areas to low.

Cold air can retain less vapor in suspension than warm air, and hence is an area of low vapor density. Vapor flows through plaster, wood, brick, stone, asphalt, building paper, and ordinary non-metallic building materials, in the direction of the least dense vapor area, usually the coldest. When it touches here a substance colder than the dew-point of the air which holds it, vapor condenses.

Condensation stimulates the growth of fungi and insects which greedily break down wood and cause timber rot. It causes paint to peel, plaster to crumble, iron to rust.

HOW TO MINIMIZE CONDENSATION

Almost impervious to vapor, scientific multiple aluminum also retards condensation-formation. The slight mass of the aluminum foil on the warm side (1/5 oz. per sq. ft.) quickly approximates the adjacent air's temperature (by conduction), and so can extract very little heat from the air. Therefore the adjacent air on the warm side remains warm and can retain its vapor content in suspension, avoiding condensation formation. On its colder side, the aluminum foil is slightly warmer than the air adjacent to it. Since heat flow in conduction is from warm to cold, the added warmth enhances the ability of this air to hold more vapor without condensing.

DRASTICALLY RETARDS HEAT FLOW

The aluminum surfaces have a high 97% reflectivity to heat rays; a low 3% emissivity. The foils also reduce inner and outer convection. Conduction is slight through the preponderant, low density air spaces.

To obtain MAXIMUM, *uniform-depth* protection against heat loss and condensation formation, use the new *edge-to-edge* multiple aluminum*, *each* sheet of which stretches from joist to joist.

The U. S. National Bureau of Standards has prepared a helpful and informative booklet, "Moisture Condensation in Building Walls." Use the coupon and we will send a free copy.

*Patent applied for

INFRA INSULATIONS CAN BE PURCHASED everywhere through your preferred local dealer for 3¢ to 12¢ per sq. ft. depending on the type.

Infra Insulation, Inc., 525 Bway., N. Y. C. Dept. R-8
Send "Moisture Condensation in Building Walls."

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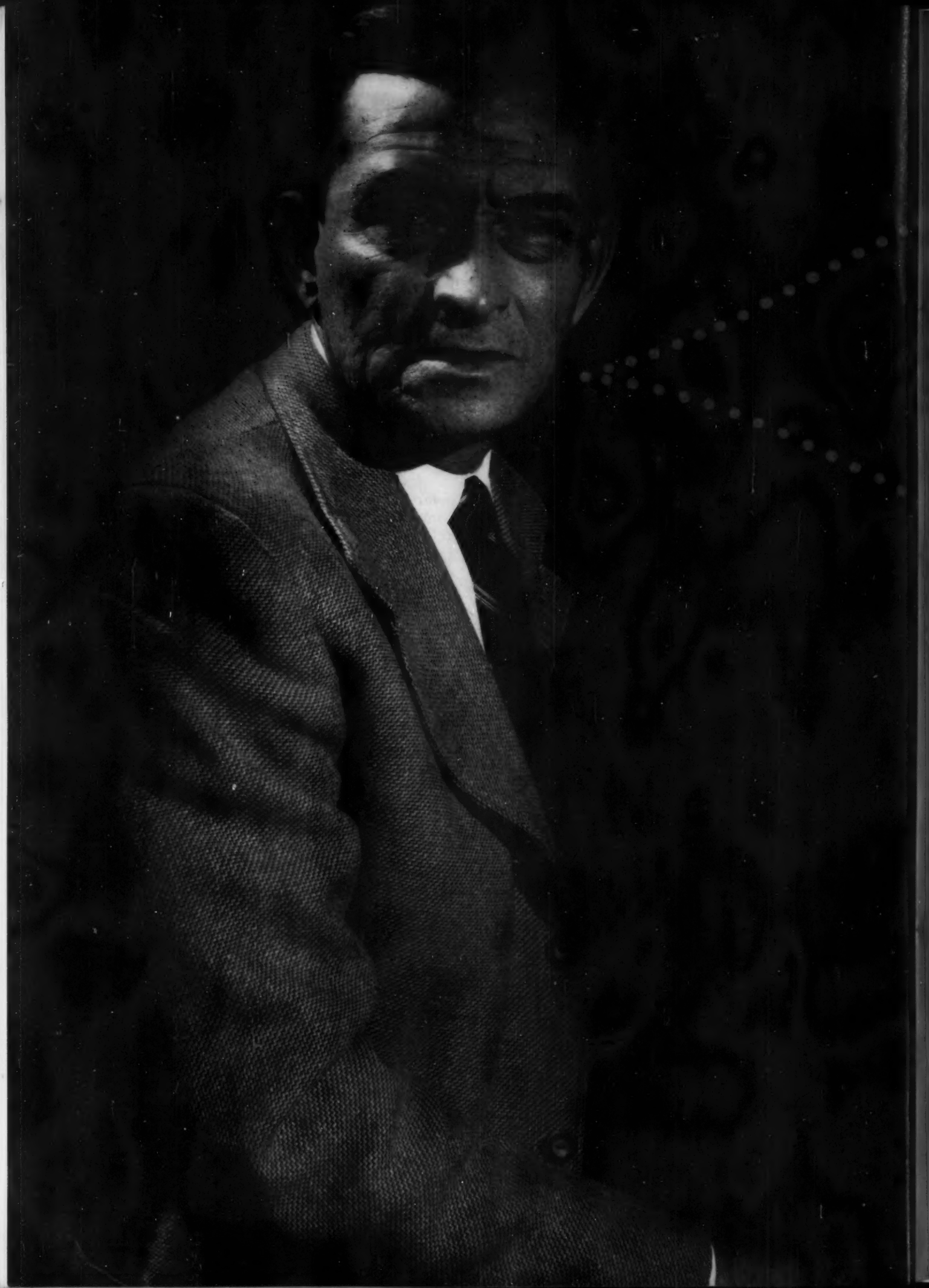


"MY SPECIFICATIONS FOR DOOR CLOSERS—

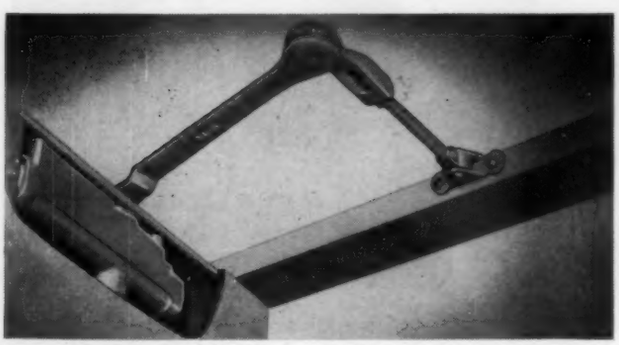
close silently and sure!"

"I'm practical minded. For me, doors are there to close...door closers are there to close them. Also, for me, door closers have to close silently, firmly... and sure. Not only for now, but for years from now.

"When I set down my door closer requirements the reassuring name that comes to mind is YALE*. What could be more dependable, better engineered or built more ruggedly than the faithful YALE Door Closer...any model bearing the name YALE."

YALE produced the first successful door closer 50 years ago and has been constantly improving them ever since. Today's models are built with infinite precision. The advanced engineering means years of unfailing service, free-running quietness and trouble-free operation.

And YALE has done more than provide the finest door closers. YALE has added new, functional, handsome modern design worthy of any installation.



YALE CONCEALED CLOSER. For interior doors of wood or metal. Entire mechanism of closer is concealed in a mortise at door top—only the arms are visible. Provides sure closing power. Built for long, trouble-free operation. Three sizes.

YALE COMPACT. Close-coupled leverage provides maximum closing power...oil-checked. Many finishes.

YALE STANDARD. Millions of them in use all over the world have proved their engineering excellence.

YALE & TOWNE

The Yale & Towne Mfg. Co., Lock and Hardware Div., White Plains, N. Y

*YALE REG. U. S. PAT. OFF.

 (Continued from page 12)

A Student Report on the New

NATIONAL ASSOCIATION OF STUDENTS OF ARCHITECTURE

The first national organization representing students in all the architectural schools of this country was founded last November in Washington, D. C., at a conference sponsored by the American Institute of Architects. The students' Executive Board, meeting during the A.I.A. annual convention in Los Angeles in May, revealed a lively diversity of opinion rivaled only by the determination to respect diversity and a sense of high purpose reflected in all they said about their future hopes. Here is a progress report on the new organization prepared especially for ARCHITECTURAL RECORD *by two members of the student Board, Laurie Mutchnik of Pratt Institute (Board secretary) and Richard Langendorf of M.I.T.*

The formation of the National Association of Students of Architecture was a result of the first Student Forum, a meeting sponsored by the American Institute of Architects and attended by a student representative from each of the 63 schools of architecture in this country. The organization's creation was a spontaneous action stemming from the delegates' belief in the need for and the values of such a national group. This organization, one for every student of architecture, has three basic aims:

1. To assist in bringing about a deeper understanding between the professional architect and the architectural student.

2. To provide channels for the interchange of ideas between students, schools, and countries.

3. To attempt to bring about a better understanding of architecture and the profession by the potential architectural student and the general public.

To help realize these aims, an Executive Board was established at the Student Forum to act as the working body of the organization.

This Board, comprised of Jim Berry of Rice Institute as president, Laurie Mutchnik of Pratt Institute as secretary, Ted Atha of Georgia Tech, Don Dumlao of V. P. I., Ernest Elwood of U. S. C., Paul Kennon of Texas A. and M., Dick Langendorf of M. I. T. and Jim Schlueter of Iowa State as Directors of the N. A. S. A.'s six regions, met at the A.I.A.'s national convention in Los Angeles to further define and develop their proposed activities in pursuit of their goals.

The points on the Board's agenda for consideration were the drafting of a constitution, further study of the organization's newsletter, the *Student Report*, exploration of the possibilities of a national and an international publication, and the formulation of an agenda for next November's Student Forum.

The constitution, which will be voted upon at the Student Forum, was designed to provide the necessary continuity and operating procedures for the N.A.S.A., both on a national and a regional level. Whereas the basic aims of the organization will be carried out on a national level, there are many opportunities for activity among the neighboring schools, such as traveling exhibits and seminars.

With three *Student Reports* having been published, the committee met to discuss means of improving the newsletter in order that it may more fully complete its aims as a frequent means of communication between students.

A national publication, planned as an annual work, is to be a representation of student work and a description of the architectural program from each of the 63 schools. The purpose of such a publication would be to indicate to potential architectural students, architectural students, laymen and members of the profession current trends and diversities in architectural education.

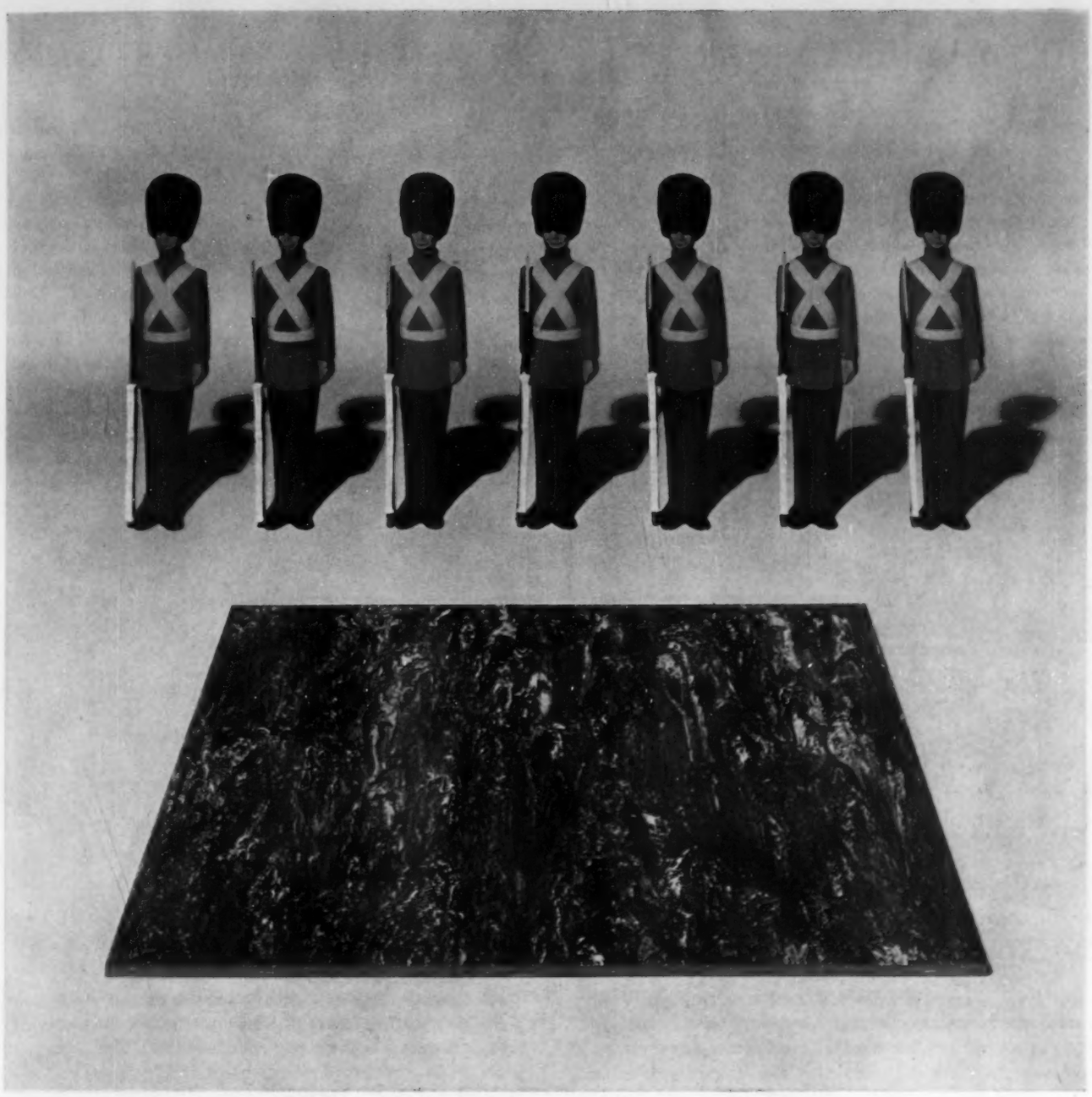
Also being considered is the possibility of an international survey of architectural education. The content of this survey would include a description of the facilities at each school in the world, general curricula, and the ideas and orientations of students and faculties.

The second Student Forum, to be held at the Octagon next November, is the general meeting of the N.A.S.A. The agenda for this Forum was programmed by the Executive Board to effect a balance between student work sessions, interchange between students and the A.I.A., speakers and panel discussions of general architectural interest and the exchange of ideas between students. The work sessions will include further development of the ideas and projects that have been formulated thus far and the initiation of new work. The students will meet with members of the A.I.A. to hear of their activities concerned with students and architects in training. An opportunity for the exchange of ideas will be provided both via panel discussion and informal student gatherings.

In addition to committee work at Los Angeles, a program of activities was planned by the students of the University of Southern California under the direction of Bob Wilkerson. The aim of the program was to permit students from the West Coast area and the Executive Board to meet with each other and the attending architects at the Convention. Activities included a breakfast at U. S. C., a panel discussion, a cocktail party, tours of Pasadena, Beverly Hills and Palos Verdes and the maintenance of a student lounge at the A.I.A.'s Biltmore Hotel convention headquarters. A reception followed the panel discussion.

STUDENT EXECUTIVE BOARD in one of its sessions at Los Angeles. Around the table clockwise: Ted Atha, Georgia Institute of Technology; Don Dumlao, Virginia Polytechnic Institute; Ernest Elwood, University of Southern California; James Berry (Board president), Rice Institute; Laurie Mulchnik (secretary), Pratt Institute; Richard Langendorf, Massachusetts Institute of Technology; Jim Schlueter, Iowa State; and Paul Kennon, Texas A & M

(More news on page 16B)



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KENTILE, INC. America's largest manufacturer of resilient floor tiles

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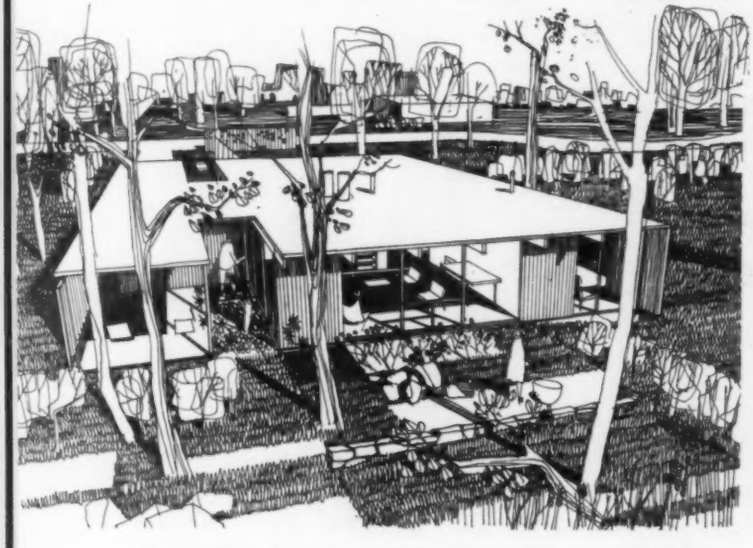
FIVE WINNERS NAMED IN ARBORETUM HOUSE COMPETITION

The Morton Arboretum has chosen five winners in its search for architects to design living quarters for its technical and maintenance staff. Houses resulting from the competition, which was undertaken "to stimulate and demonstrate original thinking in the relationship between the interior and exterior of houses," will be built as a "permanent exhibit of residential landscape planting." Situated on an 1100-acre site at Lisle, Ill., the Arboretum was established in 1922 for horticultural and arboricultual research.

The competition, open to architects, architectural draftsmen and students here and abroad, called for two- and three-bedroom houses, to be of contemporary design. Winner of the $1000 grand prize was a two-bedroom house entered by architect Gardner Ertman of Cambridge, Mass. Although the program offered six first prizes of $500 each, the jury awarded only five of these. Recipients included John O. Cotton, Minneapolis; Charles Sax, a student at Harvard University; and Hayahika Takase, a student at North Carolina State College; besides winning a first prize for his grand prize-winning design, Mr. Ertman also took a first prize for his entry in the three-bedroom category.

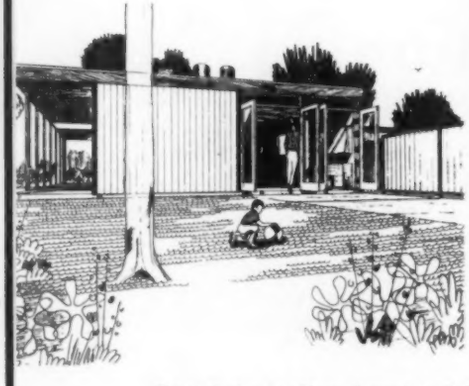
The Jury awarded seven $100 second prizes out of a possible ten, and 25 honorable mentions, each worth $50.

Architect Howard T. Fisher, of Chicago, served as the architectural advisor to the competition. Members of the jury included Douglas Haskell, editor of *Architectural Forum;* James T. Lendrum, director of the Small Homes Council of the University of Illinois; Joseph Mason, executive editor of *American Builder* (acting as technical consultant to the jury); John Normile, building editor of *Better Homes and Gardens;* and architects Philip Will Jr. and L. Morgan Yost.



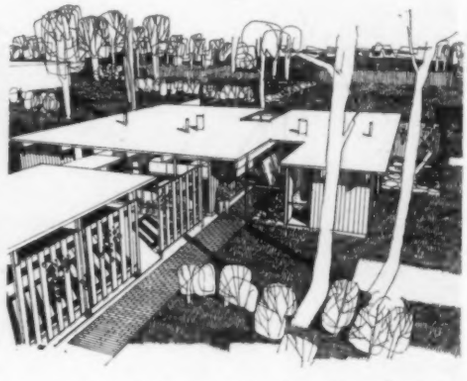
Grand Prize Winner, and First Prize Winner in Class I for two-bedroom houses, by architect Gardner Ertman, impressed jury with its "directness and lack of involved structure"

First Prize in Class II, for three-bedroom houses, went to the entry of student Hayahiko Takase; jury thought "it will be delightful to move into and through this house"



First Prize in Class I went to John Oliver Cotton; the jury praised the design as "an outstanding example of fine interrelation of indoor and outdoor areas"

First Prize in Class I was awarded to Charles Sax; jury liked the screened living area extending almost equally inside and outside the main lines of the structure"



First Prize in Class II, also awarded to Mr. Ertman, was commended by the jury for its excellent zoning, its "basic simplicity of structure and wide overhangs"

(More news on page 21)

The Price Tower, Bartlesville, Oklahoma.
Frank Lloyd Wright, architect, Spring Green, Wis.
Collins & Gould, mechanical engineers, Oklahoma City.
Culwell Construction Co., general contractor, Oklahoma City.
W. A. Landers Co., mechanical contractor, Oklahoma City.

Photograph by Joe D. Price

where perfection is the keynote...

Temperature Control by Johnson

The creative artistry expended on this impressive building easily makes it one of the most significant achievements on the architectural scene today.

This "tall building in the country" houses both offices and exclusive dwelling units. The structure is divided into four separate vertical quadrants. Three quadrants on each floor are devoted to offices. The fourth quadrant consists of eight two-story apartments.

Adding to the enjoyment of those who live and work in The Price Tower is a Johnson-engineered Control System that insures satisfying, perfectly regulated temperatures the year 'round.

Conditioned air is supplied by two high velocity double duct air conditioning systems. Sensitive Johnson Room Thermostats, controlling mixing dampers at the point of discharge, permit personal, independent temperature selections by the occupants of each apartment and office suite.

Other highlights of the system include control of the primary air supply units, regulation of air velocities, nighttime temperature setback in office areas, regulation of a perimeter hot water radiation system, automatic control of the hot water convertor and chilled water supplies, refrigeration capacity control and automatic heating-cooling changeover.

The flexibility and efficiency of this Johnson pneumatic control system not only satisfy the most exacting comfort requirements but also result in virtually *waste-free* heating and cooling performance.

Johnson can provide an equally successful control system for *any* building. The specialist Johnson organization has engineered and installed automatic temperature and air conditioning control systems for most of the nation's leading buildings, of all types and sizes.

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TALK ABOUT BELOW GRADE

MATICO TILE INSTALLED 100 FEET UNDERGROUND

Built for the Pixley Company by Haines & Jones Construction Co., Independence, Mo.

When the Pixley Company of Independence, Mo. decided to go underground, they wisely took along MATICO tile flooring for beauty and protection!

Occupying a former limestone mine 100 feet underground, this unique project serves as an ideal location to manage and control the 160 acres of vacant underground space that the Pixley Company plans to lease to others for storage purposes.

Look at the photograph above of Pixley's reception room. Notice the dramatic use of the natural limestone column for the far wall. Ceiling, too, is natural limestone. The Company refers to its headquarters as "an object lesson for industrial firms who will later use the area". This unusual project has completely modern facilities for living and working, is completely comfortable. Pictured at the left is Pixley's attractive walnut panelled main office. It's hard to believe this bright, spacious office with its "picture window" is 100 feet underground!

MATICO is proud that its tile flooring was selected for use throughout this project. Whether your next project is a completely "different" one such as Pixley, or a more traditional home, industrial, or institutional project, be sure to consider MATICO quality tile flooring. It's made to meet your most exacting demands.

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GA 396

The State of Construction

Contracts for June showed a decrease of three per cent under those of June 1955, according to figures on construction awards in the 37 eastern states released by F. W. Dodge Corporation; although total awards in the heavy engineering category were the highest in Dodge's records for the month, this gain was offset by a six per cent decline in nonresidential building and a 13 per cent decline in residential building. The picture was not entirely black, however — the cumulative six-months total for 1956 still set a record for the period with $13,198,959,000 in contracts awarded. Dr. George Cline Smith, Dodge vice president and economist, commented on the June dip that ". . . it would be rash to draw any long-range inference from these June figures alone. Contracts in June of last year were extremely high. . . . Actually, last month's total of nearly $2.2 billion was the second highest ever reported in June, and exceeds the third highest June by 27 per cent." Dr. Smith noted the promise for a high rate of actual construction in the first six-months total of awards. He added, however, that the volume of building might be adversely affected if the steel strike is not settled in a "reasonable" amount of time. "A prolonged strike," he said, "will have a serious effect on the construction industry, which was using just about all the steel it could get even before the strike. As a by-product, delays in completing jobs now underway could very well cause a slow-down in the letting of new contracts for future jobs, which would affect contract award totals in months to come." On the housing situation, John M. Dickerman, executive director of the National Association of Home Builders, reviewing factors accounting for the declining rate of residential building during the first six months, in a statement released late in June, saw a "possibility that the second half of the year may be slightly better than the first half." For details, see page 324.

Consulting Engineers Unite

Consulting Engineers Council, the first national organization representing consulting engineers in private practice, was formally established during a three day meeting in Tulsa, July 6–8. At present the Council is comprised of 10 founders and two charter state associations of consulting engineers, with a total membership of close to 600. And movements are under way in seven or eight states now to form regional groups; guesses are that they will be affiliated in six-month's time. While permanent national headquarters have yet to be chosen, chances are that they will be in Washington, D. C. (temporary headquarters are in Chicago). The Washington staff will be headed by an executive director who is scheduled to be selected by September. (In fact, a special committee has drawn up specifications for the type of person they want to fill the job). The organization will be supported solely by dues levied among the state groups by the board of directors on the basis of membership size. How the money is collected is up to the regional groups — which is indicative of the autonomy written into the constitution for these groups. National headquarters will function to provide an exchange of information between members, particularly on legal matters, fees and such, and a newsletter will be issued. An early objective of the Council is to set up a cooperating committee with A.I.A., somewhat similar to those already existing at a regional level. Officers of the Council are: president, John K. M. Pryke of the New York Association of Consulting Engineers; first vice president, C. C. Pate of the Consulting Engineers Association of Oklahoma; second vice president, B. M. Dornblatt of the Gulf Institute of Consulting Engineers; secretary, Edward J. Wolff of the Chicago Association of Consulting Engineers; treasurer, Wm. C. E. Becker of the Missouri Association of Consulting Engineers.

— Drawn for the RECORD by Alan Dunn

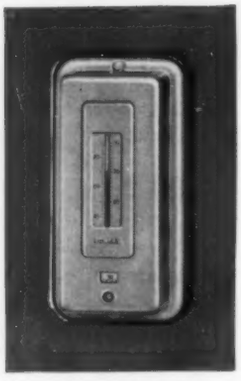
School Session in Michigan

"Planning Together for Better School Buildings: Architect-Educator Conference" is the title of a conference to be held November 1 at the Michigan Union in Ann Arbor under the joint sponsorship of the Michigan Society of Architects and the University of Michigan College of Architecture and Design and School of Education. Dean Wells I. Bennett will be chairman. Members of the national A.I.A. Committee on School Buildings, who will be meeting in Ann Arbor at the same time, will be among the participants. Invitations are extended to architects and school administrators, board members and educational consultants.

"Practice" for Educators

For the second consecutive year, the New York architectural firm of Voorhees, Walker, Smith and Smith have offered $2000 in fellowships for a summer "course" in architectural practice for two professors of architecture. Prof.

(Continued on page 24)



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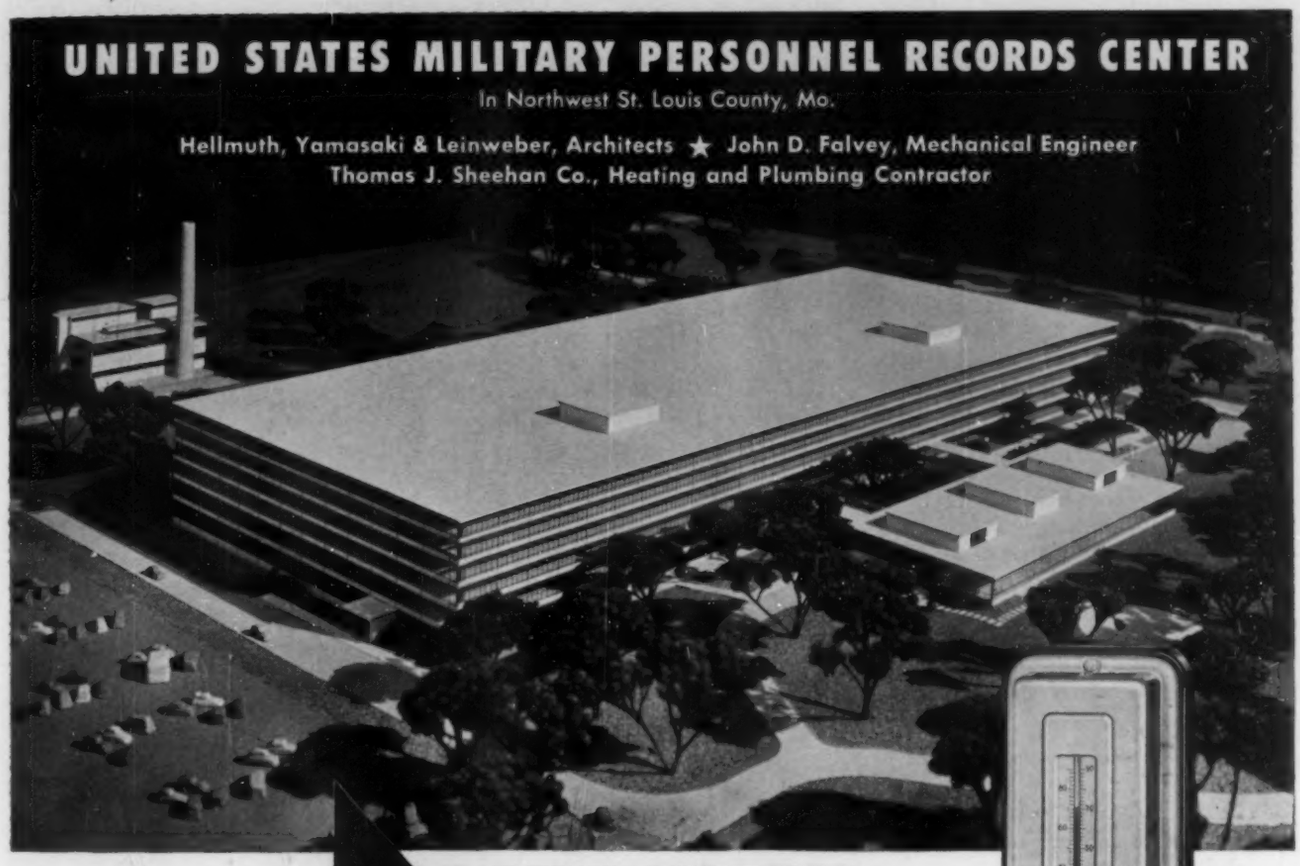

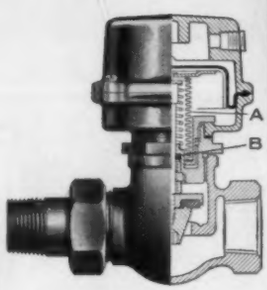

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The main building of the Records Center is six stories high, 728′ long 282′ wide. It houses the working areas while the two story assembly building 237′ x 103′ provides dining, meeting and other facilities.

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MEETINGS AND MISCELLANY

(Continued from page 21)

Donald Mochon of Rensselaer Polytechnic Institute and Prof. Alden Krider of Kansas State College, selected by their respective deans at the firm's invitation, are spending the summer getting an on-the-spot look at the operations of a very large and active firm. Along with 23 students from eight architectural and five engineering schools who have summer jobs there, Professors Mochon and Krider also benefit from a special course of lectures given weekly for the group by key members of the firm. The students also spend the last two weeks of their ten in the office out on a job, as part of a considerable effort by the firm to make student summer jobs educational for students as well as useful to the office.

Conventioners: New Jersey

The 56th annual convention of the New Jersey Chapter of the American Institute of Architects and the New Jersey Society of Architects attracted 700 participants, 287 of them architects and draftsmen, to Asbury Park on June 14–16. Functions at the meeting included three seminars — the first on "Trends in Metropolitan Living," with Martin Beck, A.I.A., as moderator, Albert Mayer, F.A.I.A., and Charles K. Agle, A.I.A.; another on "Architecture and the Fine Arts," Robert W. McLaughlin, moderator, and Olindo Grossi, A.I.A., and painter Julian Ellsworth Garnsey; and on the last day, "Legal Pitfalls in Architecture," Alfred Green, A.I.A., moderator, and lawyer Bernard Tomson. An architectural awards exhibit was held in connection with the convention. Delegates elected D. A. Hopper, A.I.A., of Irvington, president; other officers include Seymour Williams as first vice president, Eugene M. Dennis as second vice president, Jacob Shteir as treasurer and Jay C. Van Nuys as secretary.

Conventioners: Minnesota

More than 300 members of the Minnesota Society of Architects were occupied with discussions of curtain wall construction, acoustics and interior decoration at the society's 22nd annual convention June 7–8 in Minneapolis. The keynote speaker, at the first day's luncheon, was John N. Richards of Toledo, first vice president of the American Institute of Architects. Officers elected for the coming year are Victor Gilbertson, Minneapolis — president; Arthur C. Lucas Jr., Duluth — vice president; Fred Traynor, St. Cloud — secretary; and Allan Meinecke, St. Paul — treasurer; Ralph T. Keyes is executive director of the society.

Conventioners: Illinois

The Illinois Society of Architects met in Chicago on June 26 for its 59th annual meeting and election of officers. Benjamin F. Olson, Chicago, was named president. Other officers include George H. Dubin, Chicago — first vice president; Alfred F. Wolfley, Rockford — second vice president; Harry Owen Bartlett, Broadview — treasurer; Alfred F. Schimek, La Grange — secretary; Gerald F. Palmer, Chicago — financial secretary; and Nathanial Koenigsberg and George S. Smith, both of Chicago — directors. The single speaker at the evening meeting was Frank J. Roos Jr., art historian and professor at the University of Illinois.

(Continued on page 28)

Above, left: members of the executive committee of the Building Officials Conference of America include, seated: Benjamin Saltzman — secretary-elect; S. Logan McConnell — second vice president-elect; Arthur N. Rutherford — president; William G. Wharton — first vice president; Norman G. Fricke — treasurer; and standing: Paul E. Baseler — executive secretary; T. C. McBride; John E. Ryan — member-elect; S. B. Maple; Arthur J. Benline — first past president; Joseph P. Wolff — second past president; Albert P. Backhaus — member-elect; John Christiano — member-elect; Norman E. Schmidt; and C. S. McCormick, president of the Pacific Coast Building Officials Conference; Alfred H. Schroeder was absent. Top right: at the Minnesota Society of Architects' conference, Robert B. Newman, professor at Massachusetts Institute of Technology and member of the Boston acoustical consultants Bolt, Beranek and Newman, at the blackboard, talks with Arthur C. Lucas Jr., Glynne W. Shifflet, retiring president of the Minnesota Society, and Bryant Hadley, A.I.A. regional director. Bottom right: members of M.S.A. board of directors are, in front row, Ralph Keyes, executive director; Edwin Krafft; Victor Gilbertson, president; Grover Dimond Jr.; and Glynne W. Shifflet, past president — and, in the back row: Fred Traynor, secretary; Brooks Cavin, St. Paul chapter president; Otto Olsen; R. V. McCann, Minneapolis chapter president; and Arthur C. Lucas Jr., vice president. Allan Meinecke was not present.

Primary classroom of St. Lucas Lutheran Church, Toledo, Ohio

KILNOISE acoustic plaster specified for St. Lucas Lutheran Church by Newton J. Marvin A.I.A.

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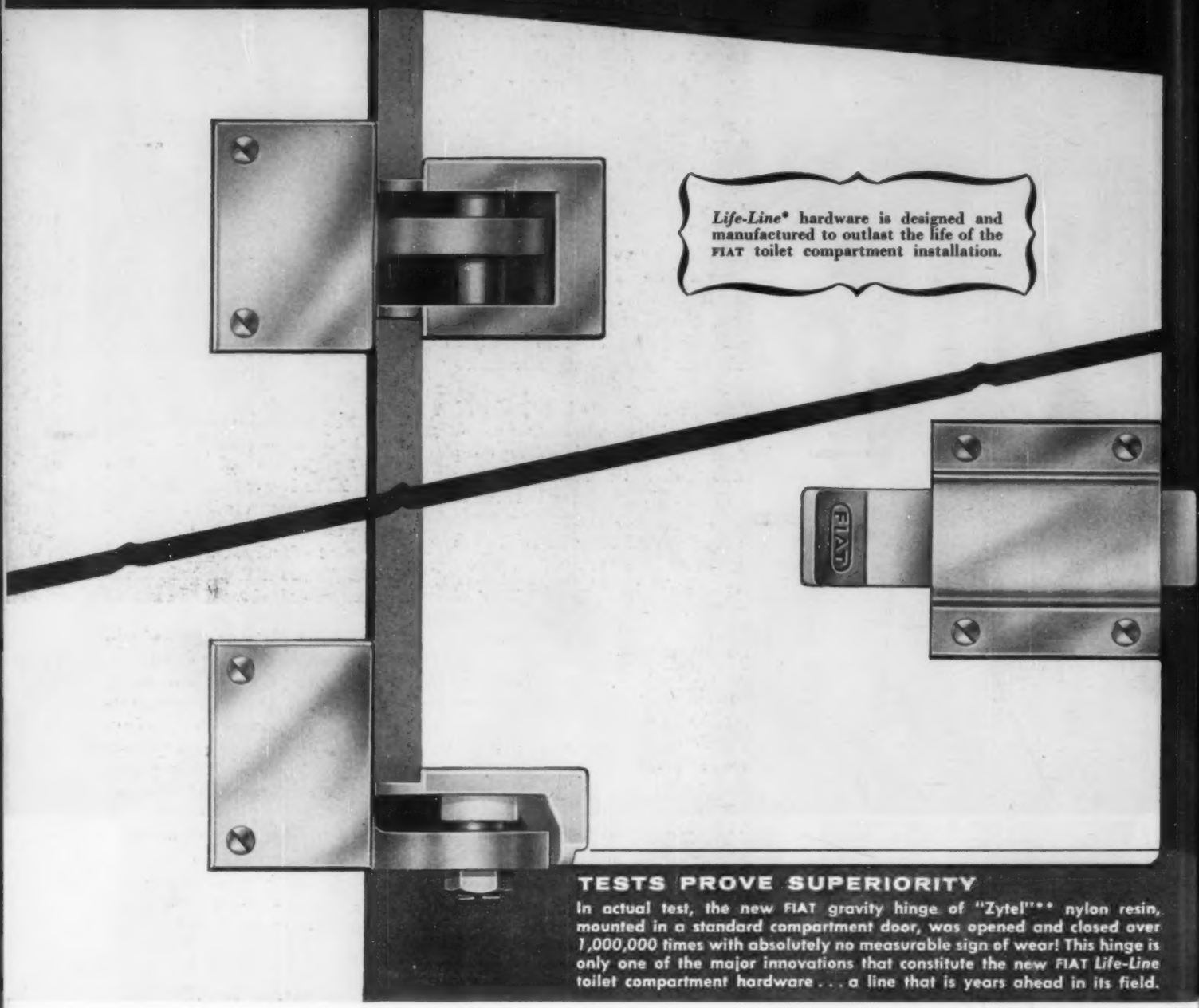

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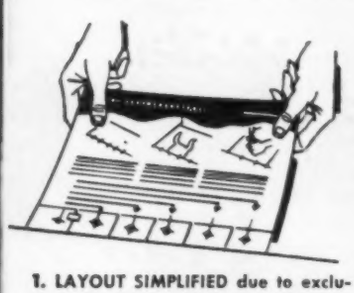
Labor costs reduced because of simplified instructions and fast installations



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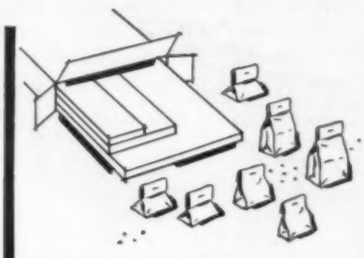
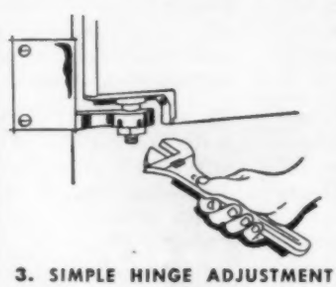
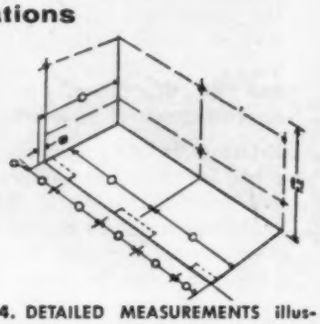


2. INDIVIDUAL PACKAGING of all fittings and hardware are plainly identified for foolproof selection.



3. SIMPLE HINGE ADJUSTMENT permits door to rest in any desired position . . . no special tools required on any part of installation.



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New! *LIFE-LINE* TOP HINGE

"Zytel", the wonder nylon resin developed by DuPont, is the bearing surface for the stainless steel pintle of this new top hinge that absolutely will not corrode . . . that simply can't wear out. In temperatures up to 450° F., "Zytel" nylon is unaffected by fungus, insects, soaps, alkalis, lubricating oils and most acids. Because of these properties, neither the bushing nor the stainless steel pintle and bushing mount will rust or deteriorate under conditions common to a toilet room. As "Zytel" is self-lubricating, the hinge operates smoothly and quietly with never a squeak or a slam.

New! *LIFE-LINE* SLIDE BOLT

This ingenious slide bolt and keeper-bumper is the result of years of experience in the shower and toilet compartment field. Designed by Reino Aarnio, S.I.D. Its simplicity is sensational and conforms to the smooth, modern, "years ahead" design typical of the entire FIAT compartment line. Enduring strength provided by special, heavy steel reinforcing inside door panel. Easily mounted with theft proof screws.

New! *LIFE-LINE* GRAVITY HINGE

Here, at last, is a true gravity hinge that has a complete load bearing and cam action surface of "Zytel" nylon. Its unique and simple design of two molded, mating cams of "Zytel" make it completely foolproof. Concealed in the door for a smooth, modern appearance, there are no bulky springs to break in fatigue or ball bearings made undersized due to door width limitations. Due to the extremely low coefficient of friction, and because "Zytel" nylon is self-lubricating, the hinge requires a minimum rise and fall for positive operation. Complete hinge is factory installed except for bracket and pintle.

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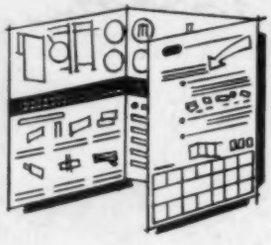

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THE RECORD REPORTS

MEETINGS AND MISCELLANY

(Continued from page 24)

Arts and the Union

The National Council of the Arts and Government, an organization founded last year to promote "sound legislation affecting the arts," recently adopted a "statement of principles and purposes" to guide its future activities. "In view of the increasing importance of the arts in our national life," the statement said, "we believe that they deserve adequate recognition by the Federal Government of the United States, by the States, and by municipalities." The statement also urged that the arts "be fully utilized in international cultural exchanges." "We believe," it concluded, "that the Federal Government, the States and municipalities, in their activities connected with the arts, should draw upon the best professional knowledge and judgment; that any advisory bodies for the arts should be professional rather than political; and that the various fields of the arts should be represented on such bodies relating to their field and should have a voice in nominating the members of such bodies." The council, of which Clarence Derwent is the chairman, was formed, independently of the government, as a result of the President's 1955 State of the Union message, in which he requested more governmental recognition of the arts. The membership, consisting mostly of "professional practitioners" of the arts, totals 39 at the present, including architects Pietro Belluschi, John Wellborn Root, Ralph Walker and William W. Wurster, but vice chairman Harold Weston indicates that the council does not consider its membership complete yet. Currently, the council is concentrating on promoting three bills now before Congress proposing the formation of a Federal Advisory Commission on the Arts. To that end, the Council last month sent to Congress a petition signed by 318 artists, among them 37 architects.

For the Centennial

Early plans for the 1957 celebration of the American Institute of Architects' 100th anniversary include an architectural exhibition at the National Gallery of Art. The exhibition, which will open May 14 as the A.I.A. meets in Washington for its national convention, will be the first on architecture in the gallery's history. Alexander S. Cochrane, A.I.A., Baltimore, is chairman of the exhibition committee, and Frederick Gutheim, A.I.A., has been retained to direct it. The exhibit, Mr. Gutheim says, will "stress the element of continuity in American architecture. . . . Themes to be developed in the exhibition include the roots of American architecture in the engineering works and constituent architecture of the 19th century as well as in the tradition of the fine arts. . . ."

With the A.I.A.

Two appointments to the headquarters staff of the American Institute of Architects have been announced by the Octagon. Reporting at the beginning of July: Joseph Watterson, A.I.A., of Mineola, Long Island, to serve as director of publications; and Theodore W. Dominick, A.I.A., Washington, D. C., to assist Walter A. Taylor, director of education and research. Mr. Dominick will be concerned wholly with general research.

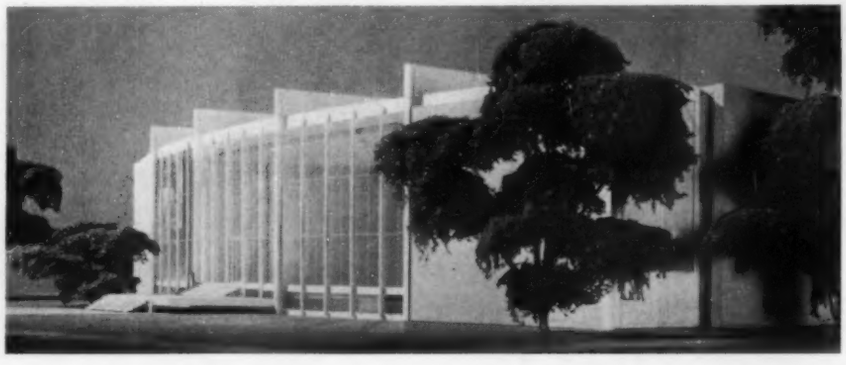
The Institute has also announced plans for its second exhibition of architectural photography. All professional photographers are eligible to submit entries, which are due at the A.I.A. Gallery on October 16. Information can be obtained from Mrs. Alice G. Korff, Curator of Gallery, The American Institute of Architects, 1735 New York Avenue N.W., Washington 6, D. C.

Designs for Living

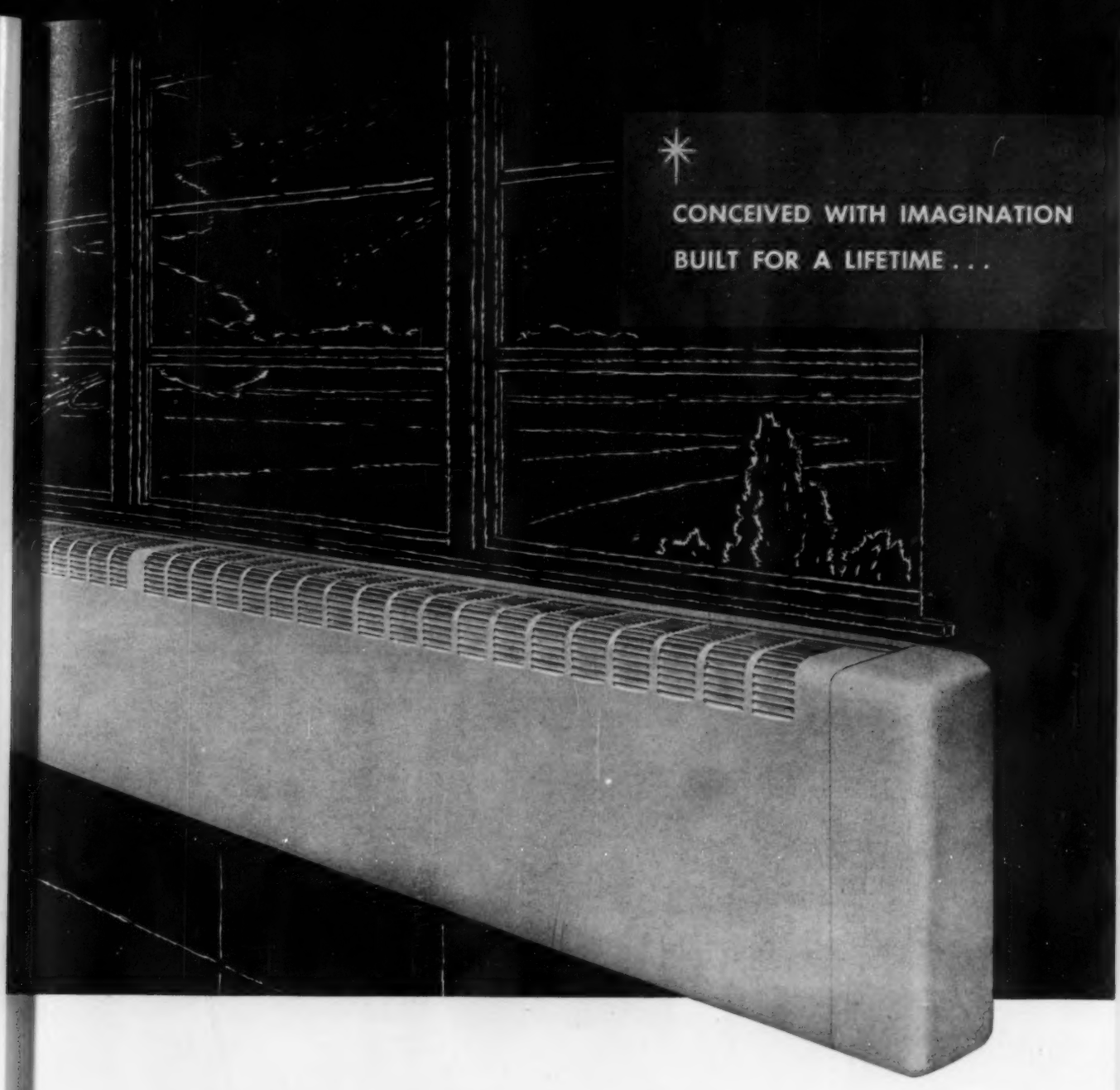
A group of more than 25 architect-designed builder houses has been commissioned by the magazine *Living for Young Homemakers* in what is described as the largest magazine-sponsored building promotion ever undertaken. The "Electri-Living" home program, co-sponsored by utility companies and home builders locally, will be shown in the September issue of *Living*. A key requirement of the program, on which *Living* had the advice of an architectural panel including four deans of architecture, is for houses designed to reflect regional influences as well as the cost bracket most readily marketable in their respective areas. All must meet "living conditioning" standards set up by *Living* "for sight, sound, safety, space, color and climate." For *Living*, according to editor-in-chief Edith Brazwell Evans, this year's program is another round in the magazine's long-term effort to educate readers and builders in the values of good design. With builders, Mrs. Evans believes the battle has been won; if architects would learn as much about builder problems, she implies, a very much larger proportion of houses would be architect-designed and the general level of house design would be a good deal higher. Readers also have responded to the magazine's consistent emphasis on design, and on the architect as designer (Mrs. Evans guesses that ten per cent of reader mail asks for names of local architects). But Mrs. Evans also observes a recent trend of reader interest toward "traditional" design; this she sees as reaction to what she calls the "static" state of contemporary design. With programs like the current one, Mrs. Evans hopes to encourage emergence of varied regional expressions of better designs for living.

(More news on page 32)

MIES VAN DER ROHE DESIGNS A MUSEUM FOR HOUSTON



For the Cullinan Hall addition to the Houston Museum of Fine Arts, needed by the museum to expand its exhibition space, architect Ludwig Mies van der Rohe, in a solution that is bound to recall the new Crown Hall at Illinois Institute of Technology (see cover and pp. 133–139), offers 10,000 sq ft of unobstructed display space. The roof will hang from four steel girders; floors and basement will be reinforced concrete, walls brick and gray-tinted glass. Studios for the museum's school, as well as storage and working space, will be located below the main floor. Yes, the facade is curved!



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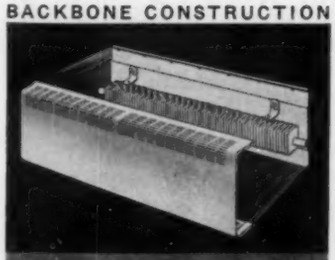
BACKBONE CONSTRUCTION



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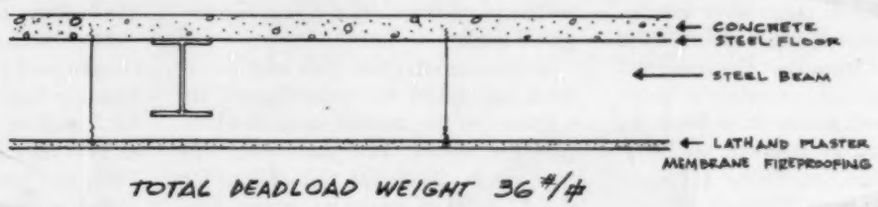
"Plaster's smooth monolithic surface, uninterrupted by exposed beam fireproofing, provided an easy-to-clean surface for maximum sanitation."



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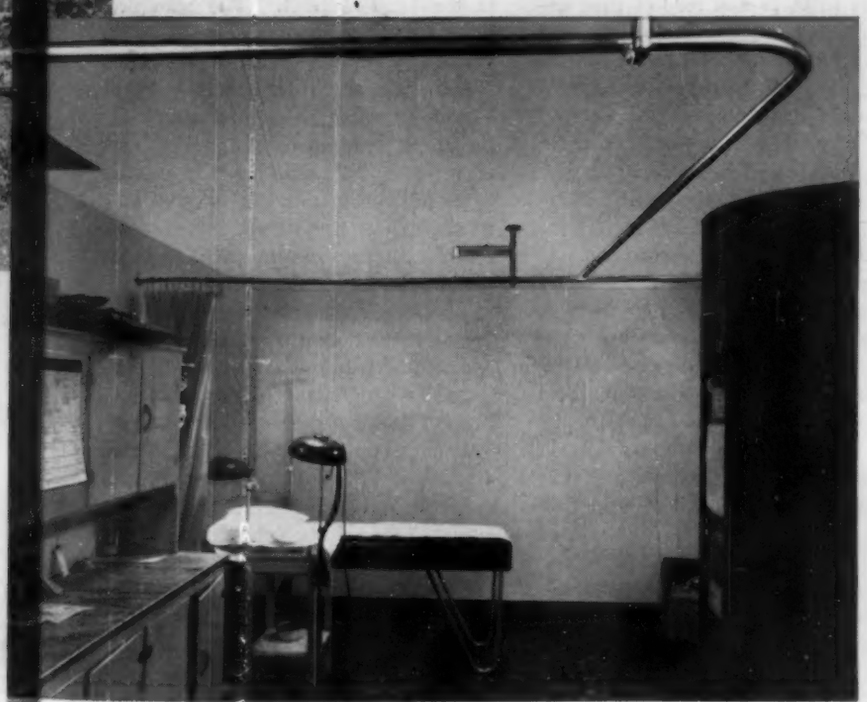

Mr. John Smallwood, right, of the Smallwood Plaster Company, presents Certified Craftsmanship Certificate covering Fairview Park Hospital project to Mr. George R. Harris, of Garfield, Harris, Robinson & Shafer, architects.

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a **WASHINGTON** *report by Ernest Mickel*

MISSION 66, A NEW CHALLENGE TO ARCHITECTS: LONG-RANGE BUILDING PLAN FOR NATIONAL PARKS

The sound of hammer and saw will disturb the tranquillity of many national park areas this fiscal year — until July 1, 1957. The improvement planned will amount to more than $14 million and is designed to launch a 10-year program which would materially change architectural aspects of national parks.

This decade-long effort, years in its planning, has been named Mission 66 because its termination would fall in 1966, the golden anniversary year of the National Park Service, a Department of Interior agency.

Everyone agrees that physical facilities in the national parks have deteriorated to a shameful extent and it is the hope of NPS officials that Congressional approval of contract authority for future construction will enable it to begin an intensive effort to improve them by putting building and utility programs on the 10-year basis. Without this authority, the year-to-year appropriation of funds would continue to control every cent of outlay and planning could not be projected nearly as far as the Service would like it to be.

Congress appropriated $15,250,000 for building and utility construction in the parks during this fiscal year. And it permitted all of this to be applied to Mission 66 work. One million of the amount is for land acquisition and water rights, leaving $14,250,000 which NPS has apportioned to its 116 contemplated improvement projects in 61 areas.

The larger increments of the design program during the 10-year period will be assigned to private architects, NPS spokesmen said. The San Francisco and Philadelphia design offices of the Service will be more active as the effort gets under way.

The parks work divides into these major categories: visitors' center buildings; utility buildings such as shops, warehouses, etc.; employe housing; and the lesser projects such as comfort stations, camp ground improvement, fire towers, and like work. As one NPS spokesman put it, with the additional design burden imposed by Mission 66 plans, "the bulges will be picked up by outside architects."

The key to increased participation by private architects in design of facilities for the national parks, power for NPS to negotiate with architects directly, last month hinged upon pending legislation which contained the future contract authority provisions. What the Service hoped to do was package its jobs in larger offerings and thus make projects more attractive to both architect and builder. The remote nature of this kind of construction, often far removed from labor and materials supplies, puts it in a unique category. This factor helps to run costs up and calls for careful analysis and decisions from initial design to completed work.

Architecturally, the Park Service always has sought to "subordinate" its buildings to the natural areas in which they are placed. This philosophy will continue in the design of buildings for the Mission 66 program: simple contemporary buildings that perform their assigned function and respect their environment are what officials say they seek. A trend toward standardization in park housing can be expected, but this will be confined largely to floor plan and inside layout. Elevations will be varied.

Where outside architects are retained, NPS usually furnishes schematic drawings in the case of housing and where larger structures are concerned, such as visitors' centers, preliminary plans may be furnished defining the units desired.

Visitors' centers always bear the higher price tags in the listing of contemplated projects. Estimates for fiscal 1957, for example, show a $224,500 center for Everglades National Park in Florida; a $250,000 center at Colter Bay, Grand Teton National Park, Wyoming; and similar buildings for Yellowstone, Chaco Canyon, New Mexico, and Carlsbad Caverns. Employe housing can run into money too. Such a project, including utilities, at Big Bend National Park in Texas, is estimated to cost $440,000.

Park officials strive to avoid standardization in design. Each building or group of buildings should be in character with its surroundings, they say, and locations differ widely. This has traditionally led to much use of stone and redwood, although preliminary designs for the newer buildings show a trend toward more liberal use of steel and glass.

The $14,250,000 for building and utility construction in the parks this fiscal year is only part of the story. Nearly $30 million is available for roads and trails and parkways development; $16,300,000 for roads, and $13.5 million for the parkways. Also, NPS construction provides only some of the national park facilities; much of the building in the parks is done by concessionaires who operate restaurant, store and housing facilities under contract with NPS.

More and more visitors have been coming each year to the national parks. Existing facilities were designed to care for 21 million visitors (the 1941 total) — in 1955 they bulged with 50 million. In 1966, the year the "mission" is completed, some 80 million are expected.

The program has President Eisenhower's endorsement. "The plan provides for a well-balanced schedule for protection, development, and staffing which can begin immediately," the President stated in a message to the Congress some months ago. "I have requested the Secretary of the Interior to submit this plan to the Congress and, to the extent that funds are available therefor in the current fiscal year, to make an immediate beginning."

The President pointed out that unless vigorous action were taken, "many Americans visiting the parks will be frustrated in gaining the scenic and educational benefits they seek and deserve."

A few weeks ago Conrad L. Wirth, director of NPS, spoke at ground-breaking ceremonies for Canyon Village, Wyoming (Yellowstone National Park). His words reflected the enthusiasm all Service people have for this program. Said he: "This occasion will remain forever as one of the truly great and memorable moments of my lifetime. For here today, as we break ground for the new Canyon Village, I can actually feel and see that Mission 66 is at last under way. The National Park Service has entered a new era which promises to be the most rewarding in its history."

(*More news on page 36*)

Tuttle + Bailey equipment installed
to handle air distribution requirements
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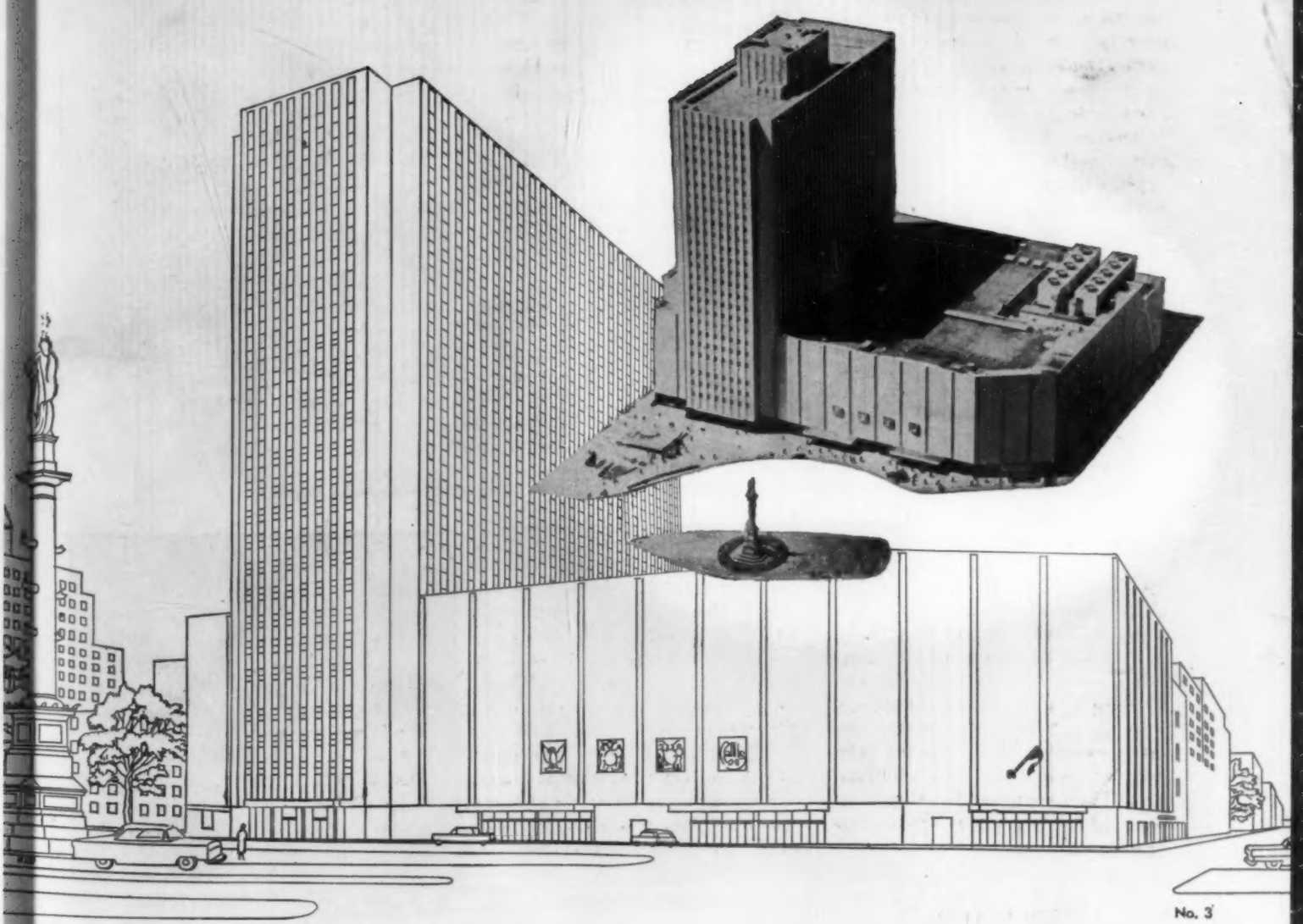

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A Progress photo in 20-story office tower.

B Lobby entrance of office tower.

comfort in New York Coliseum posed unusual mechanical problems

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A In the 20-story office tower, a high pressure double duct system extends up through two vertical shafts. Two Tuttle & Bailey temperature mixing units on each floor supply blended proportions of heated and cooled air to Tuttle & Bailey sound attenuation units located in the suspended ceiling. Structurally, this unique system minimized the duct space required above the ceiling. Performance-wise, it provides two interior zones on each floor to meet varying temperature requirements of tenants.

B In the striking lobby entrance of the office tower, low pressure Tuttle & Bailey diffusers blend with the lighting motif.

C In the entire length of the impressive 300 ft. lobby entrance to the main exhibition hall, Tuttle & Bailey low pressure supply and return grilles are installed on alternate sides of the square luminous lighting modules.

D Throughout the mezzanine exhibition areas, 8 ft. lighting modules are set into a waffle-type slab ceiling. Tuttle & Bailey high pressure sound attenuation units are located in the center of each module. High pressure ducts formed in the slab ceiling are connected with main supply ducts at the building perimeter, resulting in a zone control single duct type of system.

E The dramatic, spacious main exhibition area is conditioned from a height of 65 ft. with Tuttle & Bailey diffusers located in the vast structural network.

If you have a specific air distribution problem involving a low or high pressure system, Tuttle & Bailey's Engineering Department will welcome the opportunity to be of help. Address: R. D. Tutt, Chief Engineer, Tuttle & Bailey, New Britain, Connecticut.

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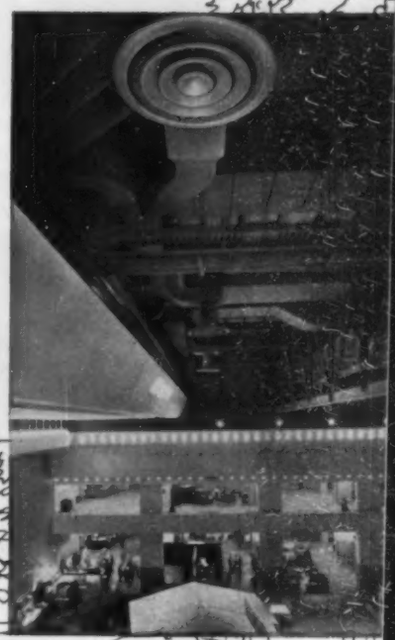
C Lobby entrance of exhibition hall.

D Portion of mezzanine exhibition area.



E Main exhibition area.

R.A.I.C. HOLDS 49TH ANNUAL ASSEMBLY

Pleasant Relaxation the Keynote for Most of 250 at Banff — Douglas E. Kertland of Toronto New President of Institute

With good news of construction activity as a happy economic context, and the rugged beauty of the Canadian Rockies as an incomparable physical setting, the Royal Architectural Institute of Canada met June 6–9 at the Banff Springs Hotel for its 49th annual assembly. It was one of the most representative and memorable to date. The Alberta Association of Architects, host for this year's assembly, was particularly gratified by the attendance figures — some 175 architects and 75 wives.

Responsibility for transacting the business of the assembly fell largely on members of outgoing and incoming Councils, which held daily meetings. While two seminars were arranged for delegates at large, chief emphasis was laid on arrangements for their rest and relaxation, an approach which could hardly fail to be successful with the multitude of attractions at Banff — one of the world's great resort areas, it offers facilities for almost every conceivable sport and pastime.

Douglas E. Kertland of Toronto succeeded A. J. C. Paine of Montreal as president of the Institute. Other newly elected officers are: A. F. Duffus, Halifax — first vice president; K. C. Stanley, Edmonton — second vice president; Maurice Payette, Montreal — honorary treasurer; Harland Steele, Toronto, honorary secretary. Mr. Paine remains on the Council, and Prof. John Biand of Montreal was elected as an additional Council member from the Province of Quebec. C. J. C. Carroll of Ottawa continues as secretary.

A good omen for the future, contract award figures for the first five months of 1956 were released by MacLean Building Reports the day the assembly opened. Continuing this year's precedent-shattering trend, the cumulative total — a whopping $1,225,000,000 — represents a 22 per cent gain over the comparable period in 1955.

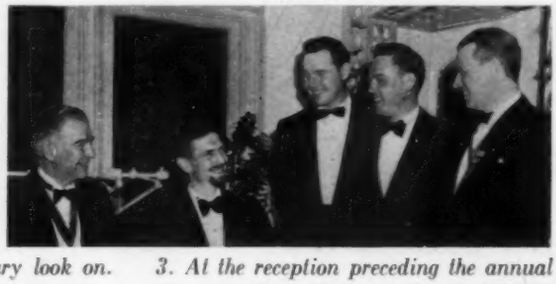
As President Paine was quick to point out, "The satisfaction of being able to work in a period of such prosperity is reflected to no small extent in the success that is being enjoyed in the affairs of the Institute."

Citing accomplishments of the past year, Mr. Paine stated that the Act of Consolidation of the R.A.I.C. is now law, and that affairs of the Institute are being conducted under the revised by-laws adopted at the last assembly.

Material is being prepared for presentation to the various departmental heads of the Government of Canada with the object of securing more generous remuneration for private architects retained on Federal projects. "Since this matter affects also engineering consultants," Mr. Paine said, "we have been

(Continued on page 40)

OFFICIAL MOMENTS — 1. At the opening business session: C. J. C. Carroll, Ottawa, R.A.I.C. secretary; A. J. C. Paine, Montreal, president; D. E. Kertland, Toronto, honorary treasurer who was to succeed Mr. Paine as president. 2. At the Convocation of Fellows: officials A. T. Galt Durnford, Montreal, dean; Burwell R. Coon, Toronto, chancellor; W. Bruce Riddell, Hamilton, registrar. All were reelected. (For list of new Fellows see AR, July 1956, page 36.) At the annual dinner: 3. Presentation of Allied Arts Medal, annual award given by R.A.I.C., to Lionel J. Thomas, Vancouver, by Hon. James Hartley, Minister of Public Works of the Province of Alberta. 4. Newly elected President Kertland is invested by Past President Paine with the official insignia of office. Looking on (at left) is Hon. James Hartley



THE LIGHTER SIDE — 1. "Western Welcome" reception — Howard L. Bouey (far right), president of the host Alberta Association of Architects, greets James B. Craig of Toronto, while Mrs. Bouey and John Stevenson Jr. of Calgary look on. 2. Against that unbelievable background — which kept the delegates' cameras busy — Quebec delegates Edouard Fiset of Quebec City and Richard E. Bolton of Montreal. 3. At the reception preceding the annual dinner — Prof. John A. Russell, Winnipeg; John Rankin, Toronto; E. J. Smith, Winnipeg; James B. Craig, Toronto; and D. G. W. McRae, Toronto

Photos by G. D. Menzies for Alberta Association of Architects and by C.P.R.

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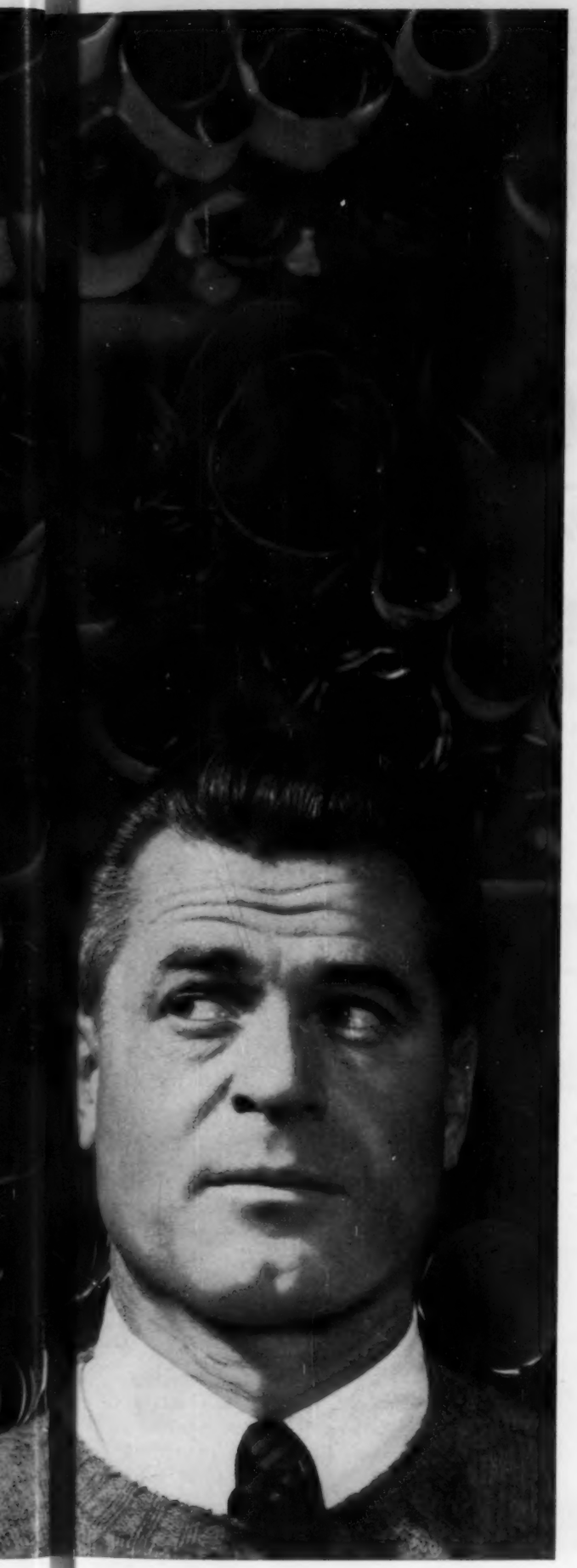

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THE RECORD REPORTS

NEWS FROM CANADA

(Continued from page 36)

working in cooperation with the Association of Consulting Engineers of Canada and hope to have also the backing of the Associations of Professional Engineers when the department heads are approached."

All R.A.I.C. contract documents have been revised and made available in both English and French, at reduced prices.

During the year, the various Canadian Schools of Architecture each received a $500 contribution from the R.A.I.C. to be used for "special purposes," such as securing equipment or services, or assisting in projects for which money normally is not provided by their universities.

The Schools now have their own organization. Known as the Conference of Canadian Schools of Architecture, it is to meet annually at the time of the R.A.I.C. assembly to discuss mutual problems.

As reported at the assembly, the Schools graduated the following number of students in 1956:

McGill University	29
Ecole des Beaux Arts	26
University of Toronto	24
University of Manitoba	10
University of British Columbia	9
Total	98

Still on the subject of statistics, it is pertinent to note that Canada's architectural profession continues its healthy growth. Latest figures show that membership in provincial Associations — all component societies of the R.A.I.C. — is as follows:

B. C.	171	Que.	508
Alta.	112	N. B.	21
Sask.	41	N. S.	34
Man.	116	Nfld.	10
Ont.	761		
		Total	1774

(Continued on page 44)

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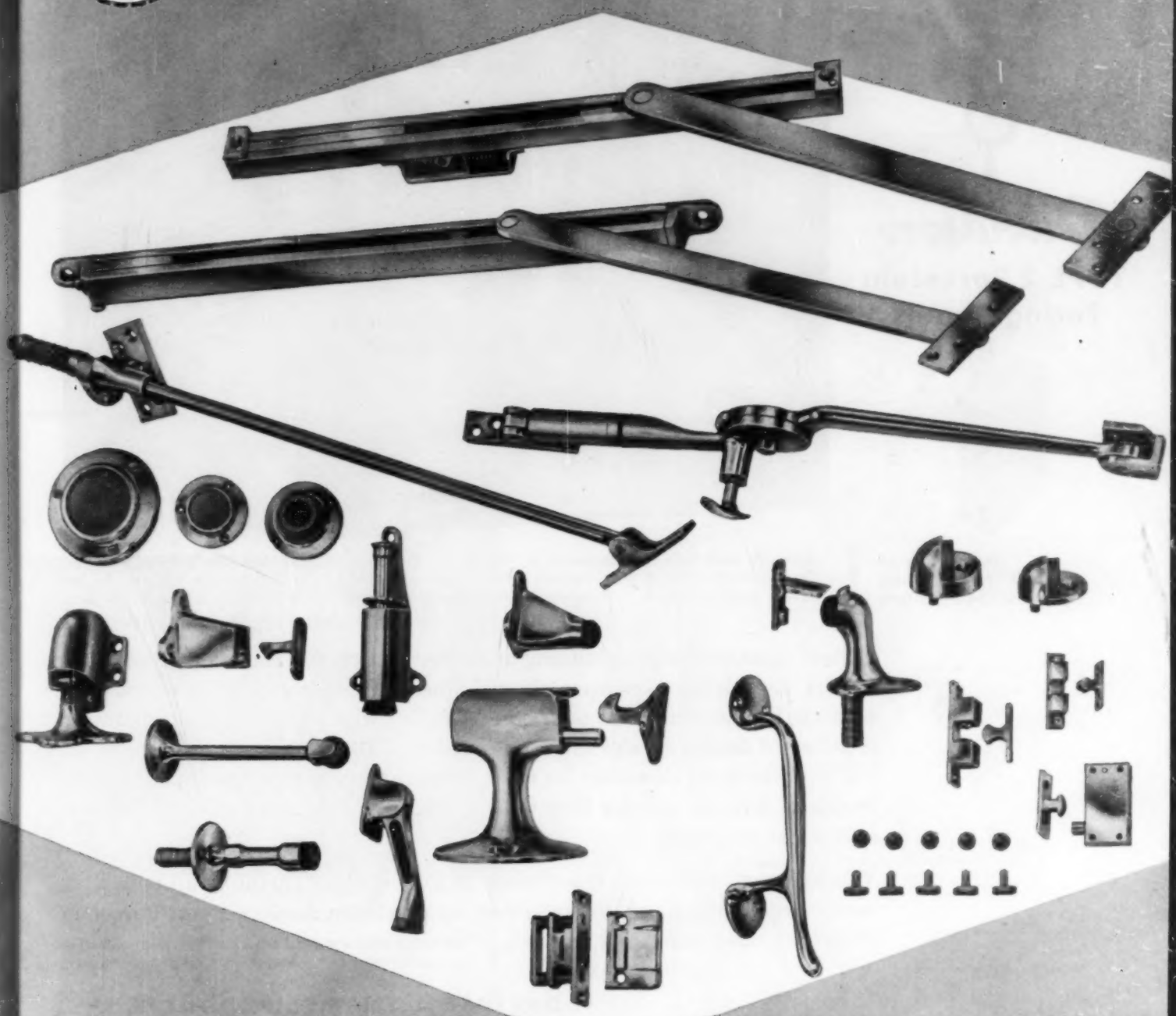

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NUMBER
2

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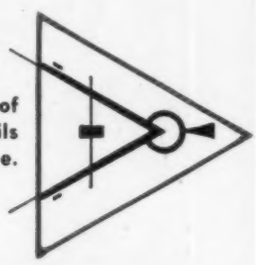
See next page for study of porcelain construction details of the building shown above.



Watch for Design Study Number 3 which will appear in this publication in Nov.

A.I.A. FILE NO. 15-M-1

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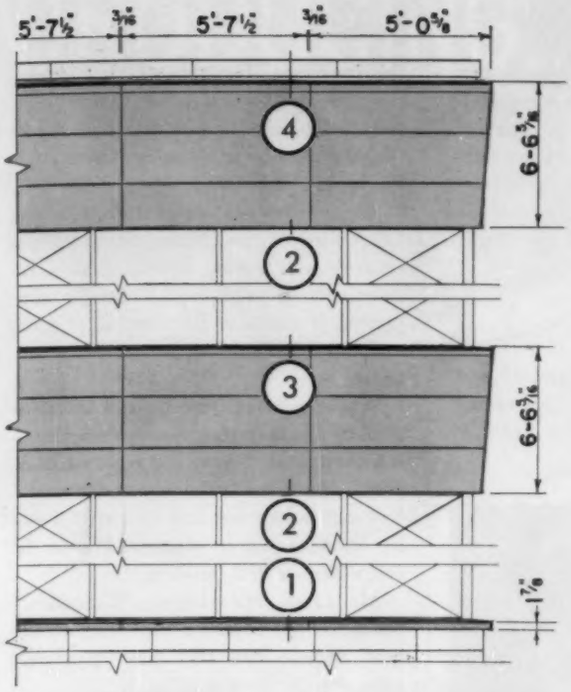
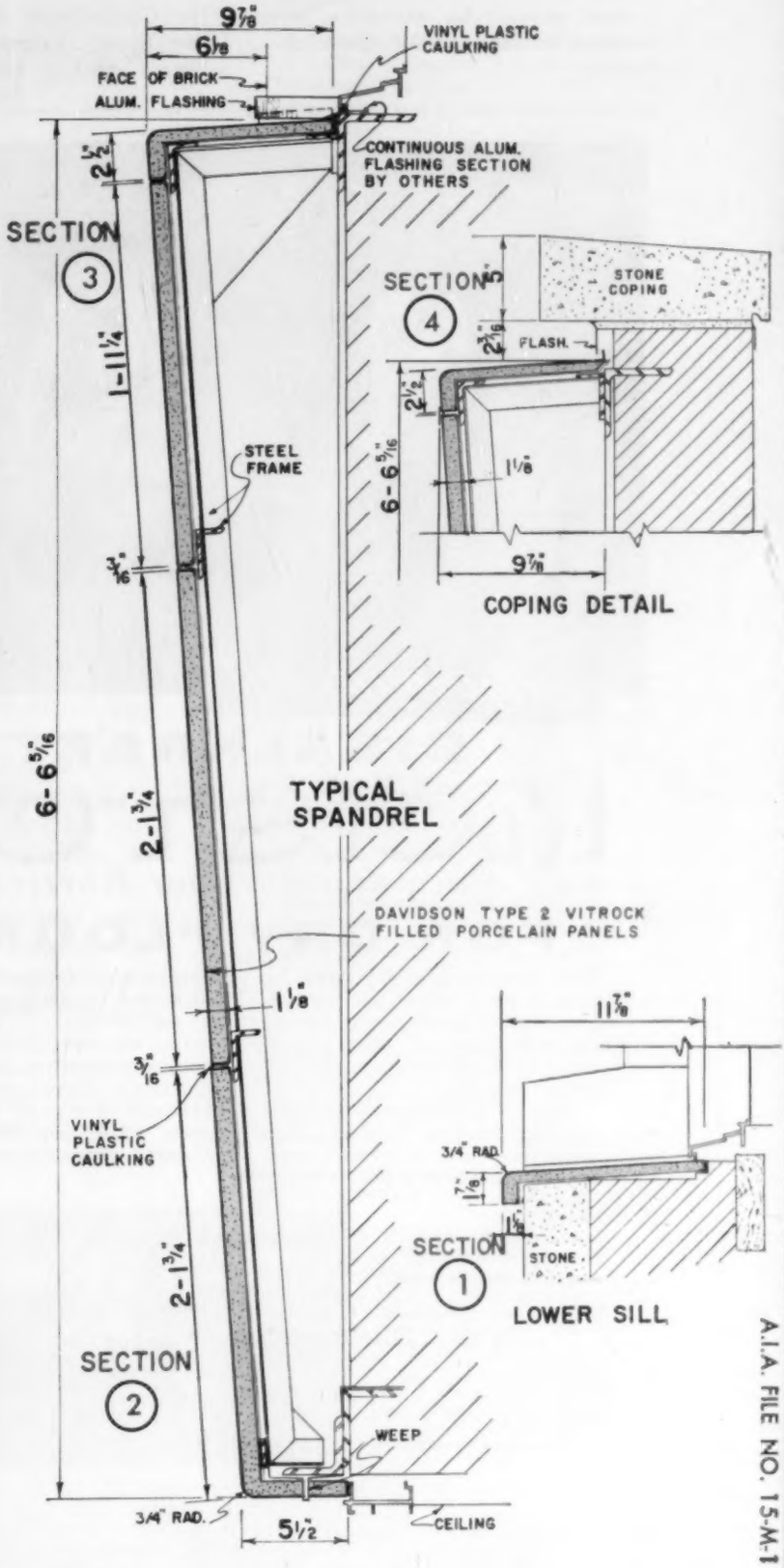
DESIGN STUDY NUMBER 2

Davidson TYPE 2 Porcelain Facing Panels





DESIGN STUDY 2

DAVIDSON ARCHITECTURAL PORCELAIN

DESIGN & DETAIL STUDY OF ARCHITECTURAL PORCELAIN

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THE RECORD REPORTS

NEWS FROM CANADA

(Continued from page 40)

Institute Awards

The Allied Arts Metal was presented at the annual banquet by Hon. James Hartley, Minister of Public Works in the Alberta Government, to Lionel A. J. Thomas, Vancouver artist. This award is made annually for outstanding performance in the arts related to architecture.

The College of Fellows Scholarship, granted every second year to a graduate of a Canadian School of Architecture to advance his architectural knowledge through travel, study or research, went to D. E. Horne of Toronto. He took his course at the University of British Columbia.

Seminar Round-up

Per Christoffersen of Read, Jones, Christoffersen, Vancouver consulting engineers, and Luke Lindo, sculptor at the Provincial Institute of Technology, Calgary, were seminar speakers.

Mr. Christoffersen's subject was "Model Stress Analysis in Concrete." Explaining that this is a fairly new field of engineering, developed from more extensive use of rigid frames in reinforced concrete and welded structural steel, he described equipment and techniques employed to measure the strength of form and three-dimensional behavior of structures.

While he noted that it is not the solution to all design problems, Mr. Christoffersen said he was convinced that proper mathematical analysis or a model test can reduce the cost of construction by showing where strength should be concentrated in a building.

Mr. Lindo, speaking on "Ceramics," reminded his audience that only in the past decade has this century shown

(Continued on page 46)

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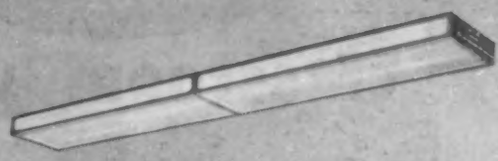

The Chief, 13⅜" wide. 8-foot unit with Corning #70 Low-Brightness Lens shown.

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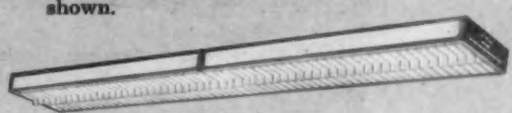

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1400 Spruce St., Dept. AR, Kansas City, Mo.

THE RECORD REPORTS

NEWS FROM CANADA

(Continued from page 44)

eagerness to incorporate decoration in modern architecture. He described limitations and potentialities involved in using enamel on steel and glass, brick and hollow tile, architectural terra cotta, wall tile and mosaic, and urged his audience to consider ceramic products in embellishing their buildings.

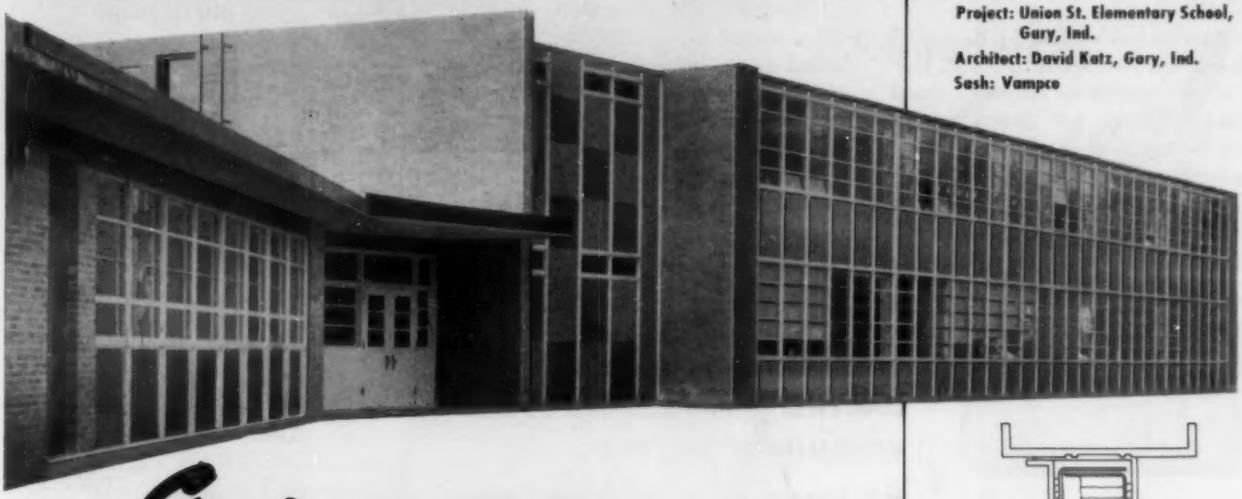
Next Year: Ottawa

Plans are being made to hold the next assembly of the R.A.I.C. — marking its 50th anniversary — in Ottawa, about the middle of May, 1957.

AND MORE — 1. Up in the Mount Norquay ski-lift (a favorite extra-convention pastime) — H. Ross Wiggs of Montreal. 2. Mr. and Mrs. Kelvin C. Stanley, Edmonton, and Mr. and Mrs. Charles Lenz, Hamilton. 3. Mr. and Mrs. John Wade, Victoria, and Mr. and Mrs. John Lovatt Davies, Vancouver

(More news on page 48)

PANEL WALL CONSTRUCTION DETAILS...



Project: Union St. Elementary School, Gary, Ind.
Architect: David Katz, Gary, Ind.
Sash: Vampco

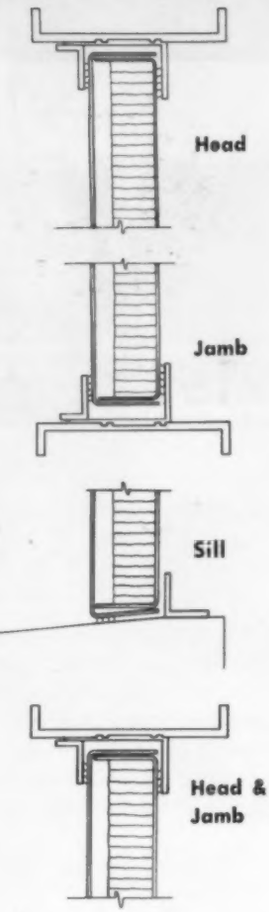
Erie U-20 . . .

A PORCELAIN ENAMEL PANEL THAT INSTALLS EASILY IN ANY SASH FRAME!

The Erie U-20 Panel is designed for sash frame installation—in any and all makes—with an absolute minimum of time and labor. Fiber glass insulated, yet only 1" thick, it offers a U-factor of approximately .20. 1½" and 2" thicknesses are also available in a variety of modifications, adapting the panel to all types of sash or mullion bar mounting. Stops or screws may be used for retention.

The U-20 Panel is double faced—mechanically assembled for permanence—and finished with weather-proof porcelain enamel in stable, lifetime colors.

Erie U-20 Panels—designed and fabricated by a company with 25 years of experience in architectural porcelain enamel—offer you complete freedom of design and minimum detailing in your curtain wall projects.



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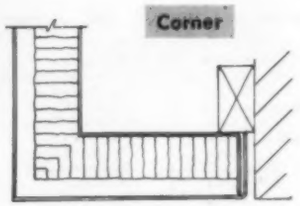
for your copy of Sketch Book III giving full details on U-20 and U-16 Panels.



For the school shown above a modified version of the U-20 was specified in a tan and rose combination.

CONSTRUCTION FUNDS MOUNT AS CONGRESS NEARS WINDUP

The Congress was winding up its session in an election-year spirit of haste. Passage of appropriations bills was ahead of schedule early last month as the legislators approached the finish line of the second session of the 84th.

One of the major achievements, constructionwise, was enactment of the $27 billion highway construction measure with its promise of 41,000 miles of modern inter-state system roads linking all the states and most of the principal cities within the next 13 years. It was hailed as the opportunity for applying the best engineering practices to the largest public works construction program the world has ever seen.

Economic impact of this broad highway development program is beyond estimation. It was agreed that living patterns in many local areas will change as a result; that emphasis on housing, commercial and industrial development will change as the super highways find their new routes.

Public Works: $863.1 Million

Other construction legislation crowded the docket. The President signed a public works appropriation bill involving $863.1 million for fiscal 1957. As he signed, he expressed concern over large amounts for new construction, starts of Army Corps of Engineer projects. The bill contained $131 million for the Bureau of Reclamation's construction program, and $455.9 million for the civil works supervised by ACE. There were 52 unbudgeted projects in the Corps' fiscal 1957 program representing future commitments of $1.5 billion.

Military Building: $2 Billion

And the Congress put through a new military public works authorization measure involving future expenditures of more than $2 billion. Also made law was the bill extending the Defense Production Act for another two years. This

(Continued on page 282)

Congress Kills School Aid; New Housing Bill in Doubt

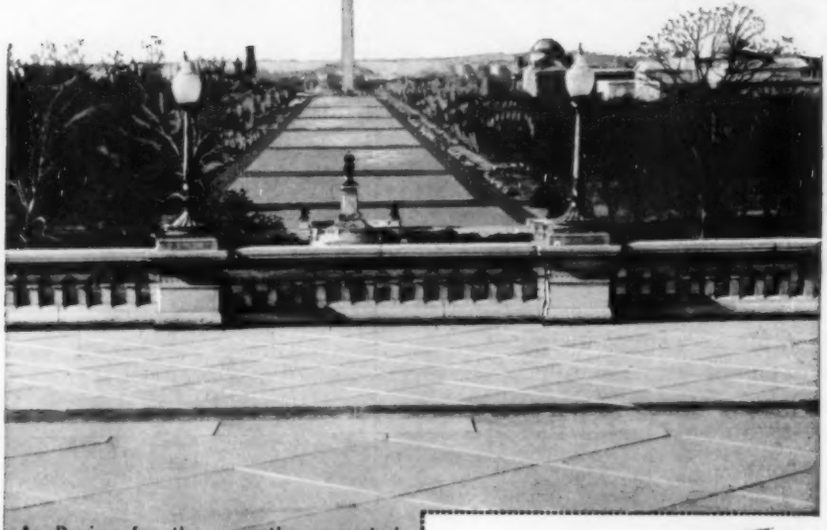
Any hope for Federal aid to school construction from this session of Congress died on the afternoon of July 9 when the House of Representatives voted 224–194 to reject the Kelley bill. The Powell amendment providing none of the bill's proposed $1.6 billion should be distributed to states failing to comply with the Supreme Court's School desegregation decision was regarded as the decisive cause of the bill's failure; but reservations about its denial of aid to "private" (including parochial) schools and about the whole idea of Federal aid to education were also involved in the battle — a major defeat for the Administration to which 119 Republicans and 105 Democrats contributed.

The vote of the House Rules Committee to "table" this year's omnibus housing bill not only made remote chances of any such bill in this session but threatened to endanger such going programs as military housing, public housing, Title I (home repair and improvement) and college housing. The issue in the House was, as usual, public housing.

Mo-Sai

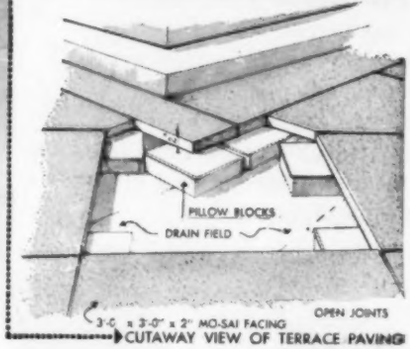
TERRACE PAVING: UNITED STATES CAPITOL, WASHINGTON. D.C.

Mo-Sai by the Mabie-Bell Co. Photo by James R. Dunlap



As Paving for the recently renovated Capitol Terraces, Mo-Sai again demonstrates its remarkable versatility. 75,000 square feet of thin (2") Mo-Sai sections, separated by ¼" open joints, were laid on concrete pillow blocks, with subsurface provision for drainage.

Extremely flexible in shape or size, Mo-Sai may suit the requirements of your next job. Consult your nearest Mo-Sai Associate for details.



3'-0" x 3'-0" x 2" MO-SAI FACING
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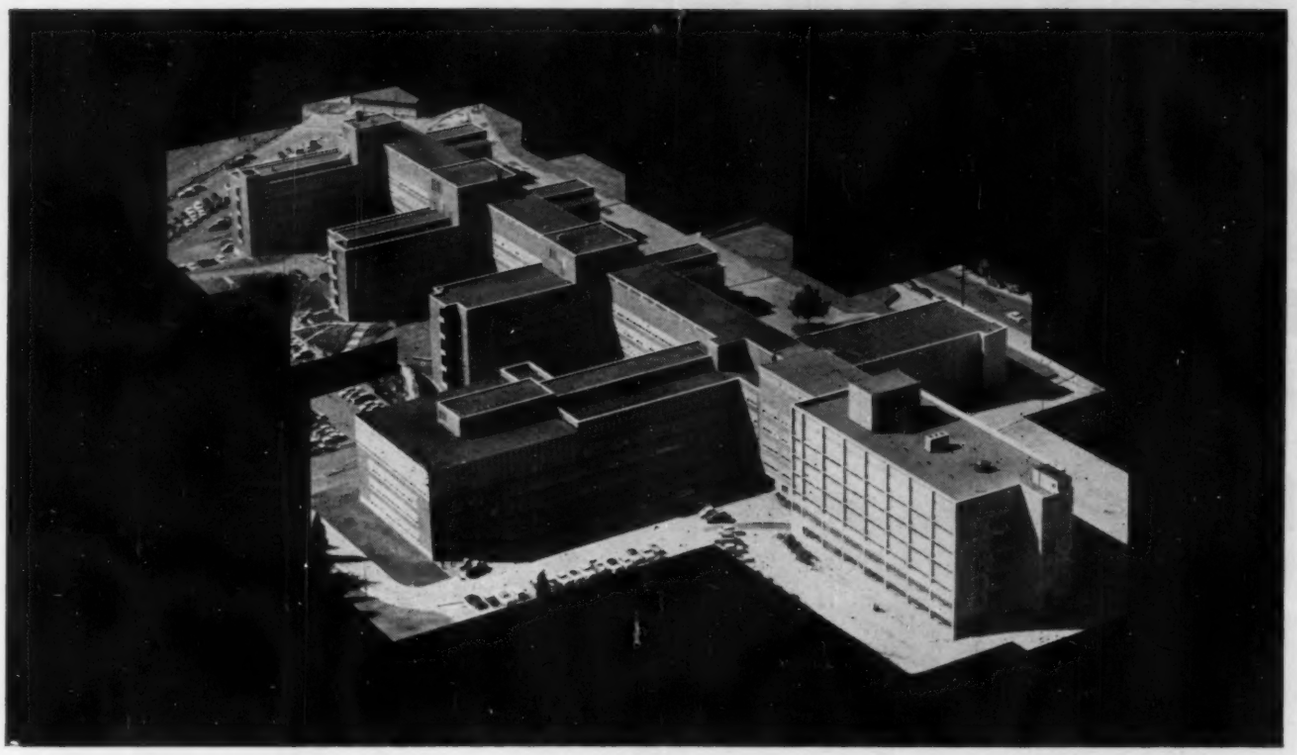

Architects: Narramore, Bain, Brady, and Johanson; McClelland and Jones
Professional Engineers: Bouillon and Griffith
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(Health Science Building) W. E. Beggs
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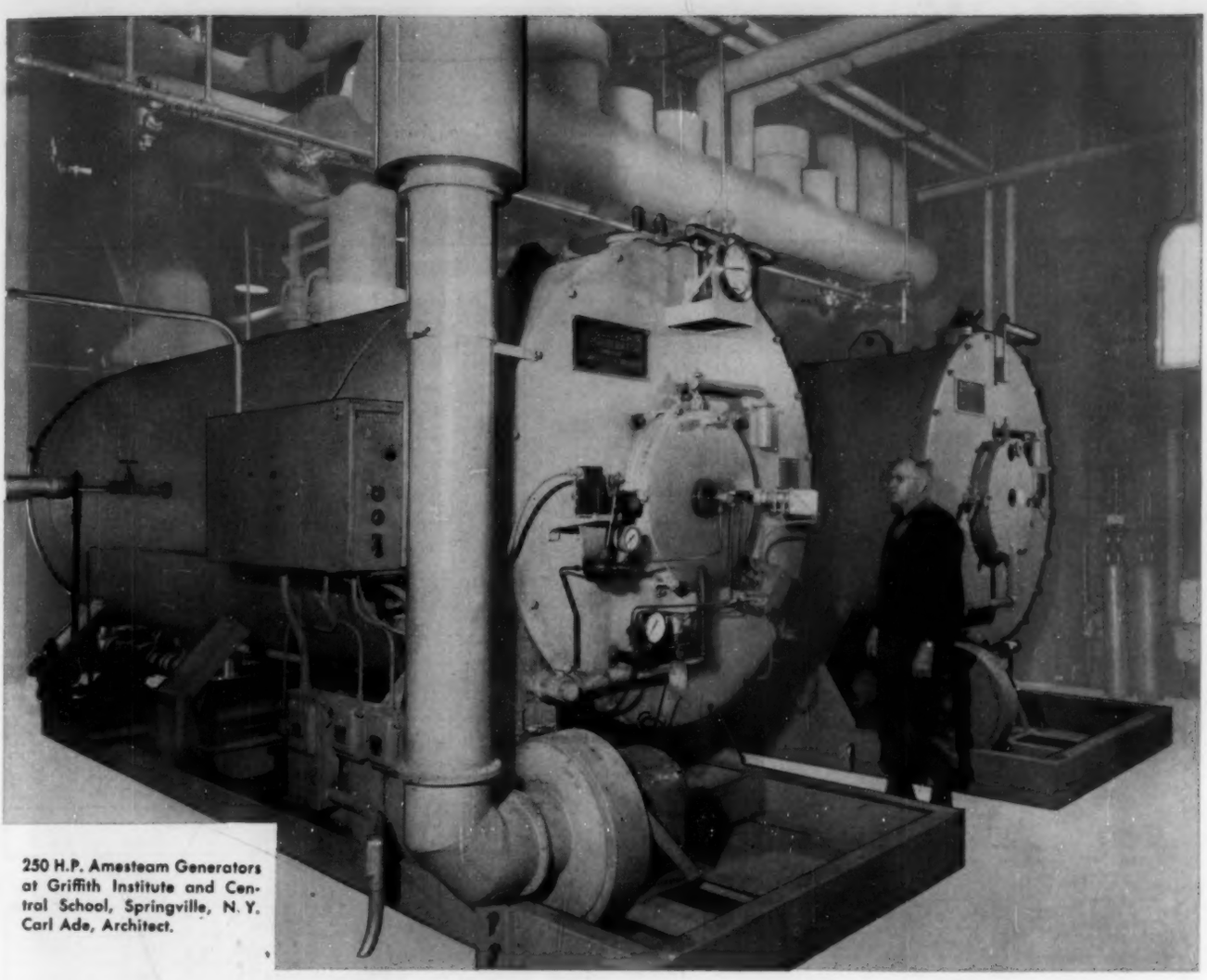

250 H.P. Amesteam Generators at Griffith Institute and Central School, Springville, N. Y. Carl Ade, Architect.

ANOTHER FINE SCHOOL REPORTS SATISFACTION WITH

AMESTEAM GENERATOR

The beautiful new Junior-Senior High School above represents the finest functional educational design in the distinguished 126-year history of Griffith Institute at Springville, N.Y. Thoroughly in keeping with the modern facilities are the two 250 h.p. Amesteam Generators. These fully automatic "package" boilers, installed as complete units without complicated on-the-job assembly work, require a minimum of space.

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We find them much cleaner, of course, and we are also well pleased with their very dependable and economical performance. As you know, we still have coal-fired boilers in the older buildings, so we have a chance to make a direct comparison. I can assure you that whenever these coal-fired units need replacing, our first consideration will be Amesteam Generators."

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THE RECORD REPORTS: CONSTRUCTION COST INDEXES

Labor and Materials — **U. S. average 1926–1929 = 100**

Presented by Clyde Shute, manager, Statistical and Research Division, F. W. Dodge Corp., from data compiled by E. H. Boeckh & Assocs., Inc.

NEW YORK

Period	Residential		Apts., Hotels Office Bldgs.	Commercial and Factory Bldgs.	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1930	127.0	126.7	124.1	128.0	123.6
1935	93.8	91.3	104.7	108.5	105.5
1939	123.5	122.4	130.7	133.4	130.1
1946	181.8	182.4	177.2	179.0	174.8
1947	219.3	222.0	207.6	207.5	203.8
1948	250.1	251.6	239.4	242.2	235.6
1949	243.7	240.8	242.8	246.4	240.0
1950	256.2	254.5	249.5	251.5	248.0
1951	273.2	271.3	263.7	265.2	262.2
1952	278.2	274.8	271.9	274.9	271.8
1953	281.3	277.2	281.0	286.0	282.0
1954	285.0	278.2	293.0	300.6	295.4
1955	293.1	286.0	300.0	308.3	302.4
Mar. 1956	307.0	299.2	313.8	322.5	318.4
Apr. 1956	307.9	300.4	314.7	323.4	319.0
May 1956	308.1	300.6	315.0	323.6	319.2
	% increase over 1939				
May 1956	**149.5**	**145.6**	**141.0**	**142.6**	**145.3**

ATLANTA

Period	Residential		Apts., Hotels Office Bldgs.	Commercial and Factory Bldgs.	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1930	82.1	80.9	84.5	86.1	83.6
1935	72.3	67.9	84.0	87.1	85.1
1939	86.3	83.1	95.1	97.4	94.7
1946	148.1	149.2	136.8	136.4	135.1
1947	180.4	184.0	158.1	157.1	158.0
1948	199.2	202.5	178.8	178.8	178.8
1949	189.3	189.9	180.6	180.8	177.5
1950	194.3	196.2	185.4	183.7	185.0
1951	212.8	214.6	204.2	202.8	205.0
1952	218.8	221.0	212.8	210.1	214.3
1953	223.3	224.6	221.3	221.8	223.0
1954	219.6	219.1	223.5	225.2	225.4
1955	225.3	225.1	229.0	231.5	231.8
Mar. 1956	234.2	232.6	237.1	240.3	239.4
Apr. 1956	235.9	234.5	238.3	241.3	241.1
May 1956	236.3	234.9	238.8	241.7	241.5
	% increase over 1939				
May 1956	**173.8**	**182.7**	**151.1**	**148.2**	**155.0**

ST. LOUIS

1930	108.9	108.3	112.4	115.3	111.3
1935	95.1	90.1	104.1	108.3	105.4
1939	110.2	107.0	118.7	119.8	119.0
1946	167.1	167.4	159.1	161.1	158.1
1947	202.4	203.8	183.9	184.2	184.0
1948	227.9	231.2	207.7	210.0	208.1
1949	221.4	220.7	212.8	215.7	213.6
1950	232.8	230.7	221.9	225.3	222.8
1951	252.0	248.3	238.5	240.9	239.0
1952	259.1	253.2	249.7	255.0	249.6
1953	263.4	256.4	259.0	267.6	259.2
1954	266.6	260.2	263.7	273.3	266.2
1955	273.3	266.5	272.2	281.3	276.5
Mar. 1956	288.3	280.4	286.2	297.6	290.9
Apr. 1956	289.1	280.9	286.8	298.4	291.1
May 1956	289.5	281.3	287.3	298.8	291.5
	% increase over 1939				
May 1956	**162.7**	**162.9**	**142.0**	**149.4**	**145.0**

SAN FRANCISCO

1930	90.8	86.8	100.4	104.9	100.4
1935	89.5	84.5	96.4	103.7	99.7
1939	105.6	99.3	117.4	121.9	116.5
1946	159.7	157.5	157.9	159.3	160.0
1947	193.1	191.6	183.7	186.8	186.9
1948	218.9	216.6	208.3	214.7	211.1
1949	213.0	207.1	214.0	219.8	216.1
1950	227.0	223.1	222.4	224.5	222.6
1951	245.2	240.4	239.6	243.1	243.1
1952	250.2	245.0	245.6	248.7	249.6
1953	255.2	257.2	256.6	261.0	259.7
1954	257.4	249.2	264.1	272.5	267.2
1955	268.0	259.6	275.0	284.4	279.6
Mar. 1956	274.8	267.0	281.8	290.3	288.9
Apr. 1956	276.2	268.2	282.7	291.7	289.6
May 1956	280.1	270.6	288.5	299.1	295.3
	% increase over 1939				
May 1956	**165.2**	**172.5**	**145.7**	**145.4**	**153.4**

Cost comparisons, as percentage differences for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:

index for city A = 110
index for city B = 95

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

$$\frac{110-95}{95} = 0.158$$

Conversely: costs in B are approximately 14 per cent lower than in A.

$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926–29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.

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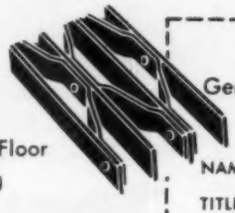

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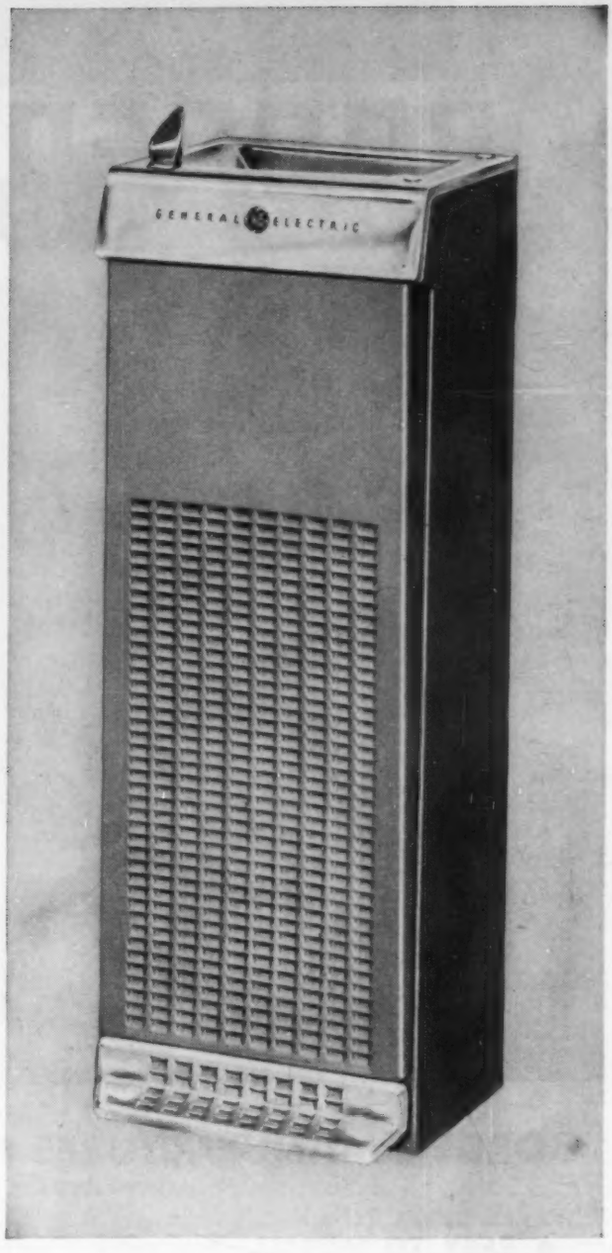

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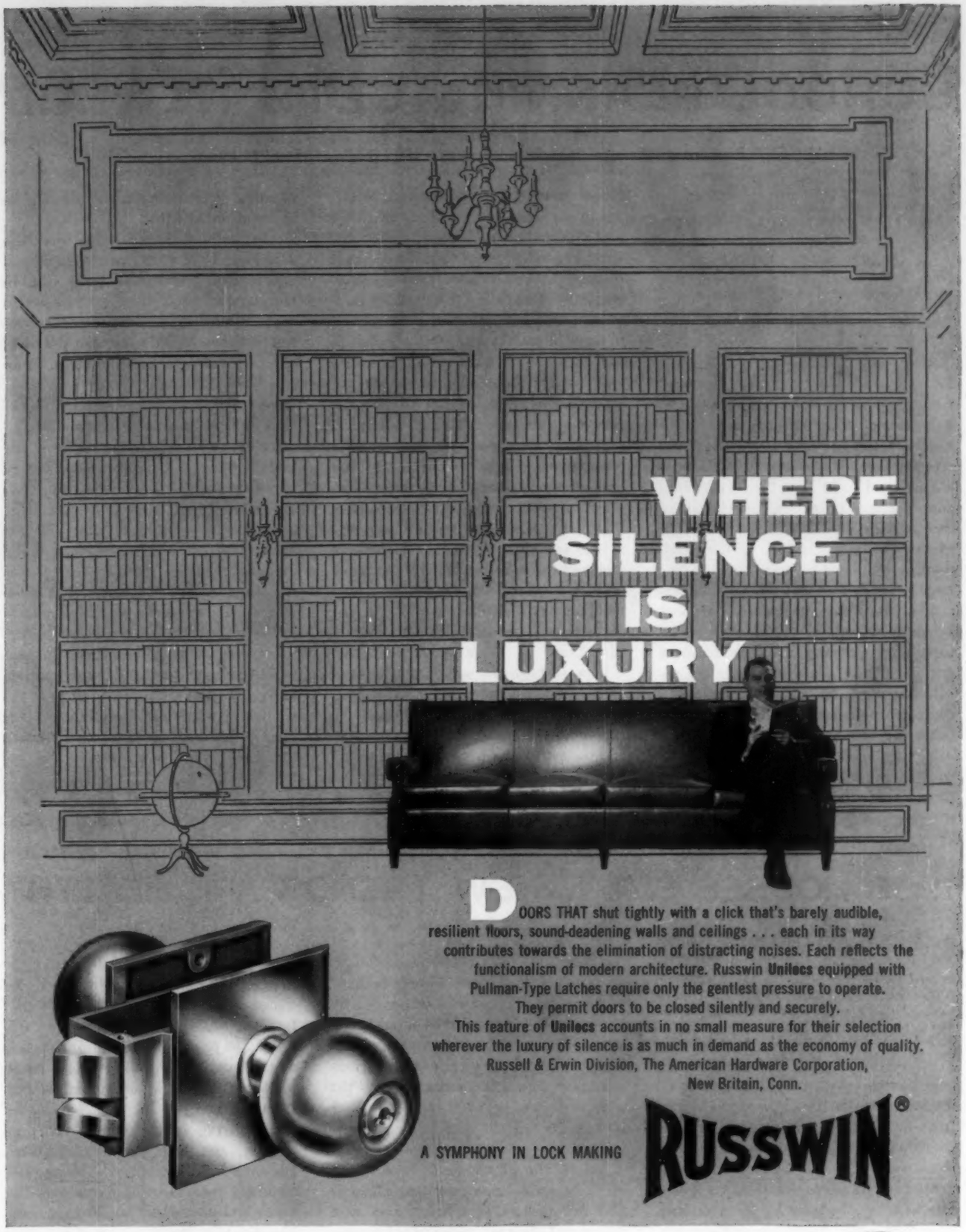

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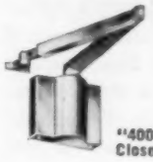

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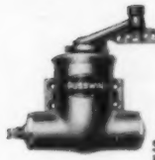

Surface Door Closers

Fire Exit Bolts

SCHOOL PLANNING GETS NEW AID

By CYRIL G. SARGENT *Professor of Education and Director, Center for Field Studies, Harvard University*

School Planning Handbook. By Engelhardt, Engelhardt and Leggett. F. W. Dodge Corp. (119 W. 40th St., N.Y.C.) 1956. 600 pp.

From School Program to School Plant. By John H. Herrick, Ralph D. McLeary, Wilfred F. Clapp and Walter F. Bogner. Henry Holt & Co. (383 Madison Ave., N.Y.C.) 1956. 482 pp, illus. $5.50

THESE ARE TIMES OF TREMENDOUS ferment and change in public education. Children crowd the schoolhouses nearly everywhere and entirely new communities spring up almost overnight creating further building needs. Teachers are hard to find for these expanding enrollments since almost 10 per cent of the teaching staff leaves the classroom every year, a large part of the classrooms are and will be staffed by "green" teachers under present patterns of personnel utilization. Financial support becomes difficult to secure even in an expanding economy as more teachers are added and salary schedules are revised upwards to enable education to compete more successfully with other fields of professional service.

Yet in the midst of these quantitative concerns, it is essential not to neglect problems of quality. Better schools, better programs of secondary education, better training for the sciences, better use of personnel, all are being asked for and expected of the schools. Indeed, we will have failed in our task if we do not respond to the White House Conference's reaffirmation of America's faith in education and its goals for the schools in areas of social and ethical conduct as well as in intellectual training. In a very real sense, we must both solve our quantitative questions and at the same time continue and intensify our quest for ways of more effectively pursuing our central goal — how to release the human mind and spirit for ever higher levels of aspiration and attainment. It is this that makes education exciting and it is in contributing to this that school architecture can also find its challenge and its measure, for surely the school building has a significant effect on the atmosphere, the tone and the spirit of education.

How to raise the sights of boards of education, how to recognize the good and beautiful from the tawdry and the cheap, how to keep to the fore the issues of quality when pressed on every side with problems of quantity and technical detail, is perhaps the most difficult task that anyone, school administrator, educational consultant and architect alike are confronted with.

The authors of the *School Planning Handbook* have many examples of success to their credit in this endeavor. In the present book they address themselves almost exclusively to the quantitative and technical aspects of the problem of planning school buildings. From their broad range of experience they have drawn together a series of checklists, schedules, case studies, and contract forms for all phases of the school building process from the initial survey to the opening of the school.

Each chapter has one to four collaborators, each a significant figure, which is at once a strength and a weakness of the material. With so many persons contributing, it is but natural that some overlapping, redundancy and unevenness in the presentation are present. At the same time to be able to examine the practice of architects and administrators as to steps and sequence, to observe the procedural detail of bureacratic planning in San Francisco, to have brought together in one book much of the material that architects and engineers regularly use, is both instructive and

(Continued on page 60)

1956 HOUSES SHOW NEW TRENDS ARE HEALTHY

By JOHN H. CALLENDER

Record Houses of 1956. By the editors of ARCHITECTURAL RECORD. F. W. Dodge Corp. (119 W. 40th St., N.Y.C.) 1956. 316 pp., $2.95

RECORD HOUSES OF 1956 presents 29 new houses selected by the editors of ARCHITECTURAL RECORD. Since houses from all parts of the country are included, the book affords an interesting cross section of the best current residential design. Generalizations are therefore in order. Judging by the sampling presented here, American architecture is in fine health. Here are no great masterpieces, but a remarkably high level of accomplishment and a rich variety of design. Some readers may be struck by the fundamental similarities between the houses, the aesthetic unity that pervades all of them regardless of region or architect. Others may be impressed by the considerable differences between one design and another, sometimes indicating the persistence of a healthy regionalism, more often demonstrating the wide variety of personal expression that is possible within the contemporary style.

Among the 27 architects represented are many well-known names. There is also a considerable sprinkling of new names and these are responsible for some of the most interesting houses in the book, a circumstance which argues well for the future. One of the houses in this group furnished the handsome cover of the book and another is the subject of an unusual opening study.

The house in Rye, New York, designed by Ulrich Franzen for his own family's use, is presented in considerable detail (16 pages) in the opening section of the book. In addition to the usual architectural photographs and drawings, there are also photographs showing the family living in the house — children playing, the wife preparing a meal, guests being entertained — along with comment by Lawrence Kocher on this house and on modern houses in general. The Franzen house is one of the most successful examples of that type of design in which an unusual structural system is employed and this structure determines the appearance of the house. Such architecture is barely distinguish-

(Continued on page 320)

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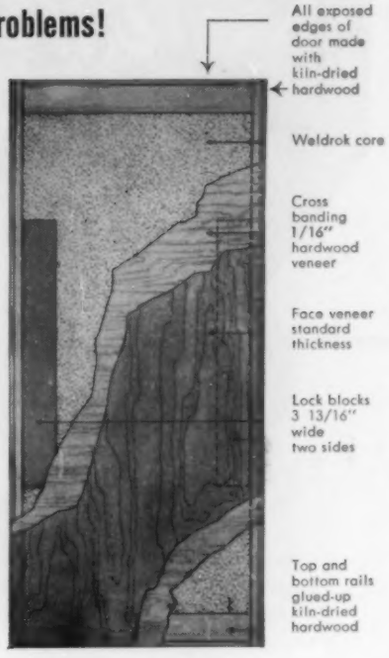
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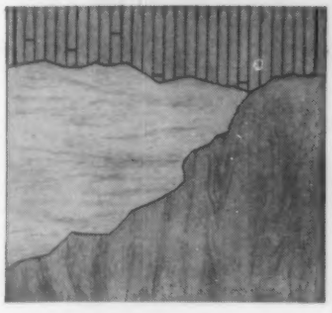

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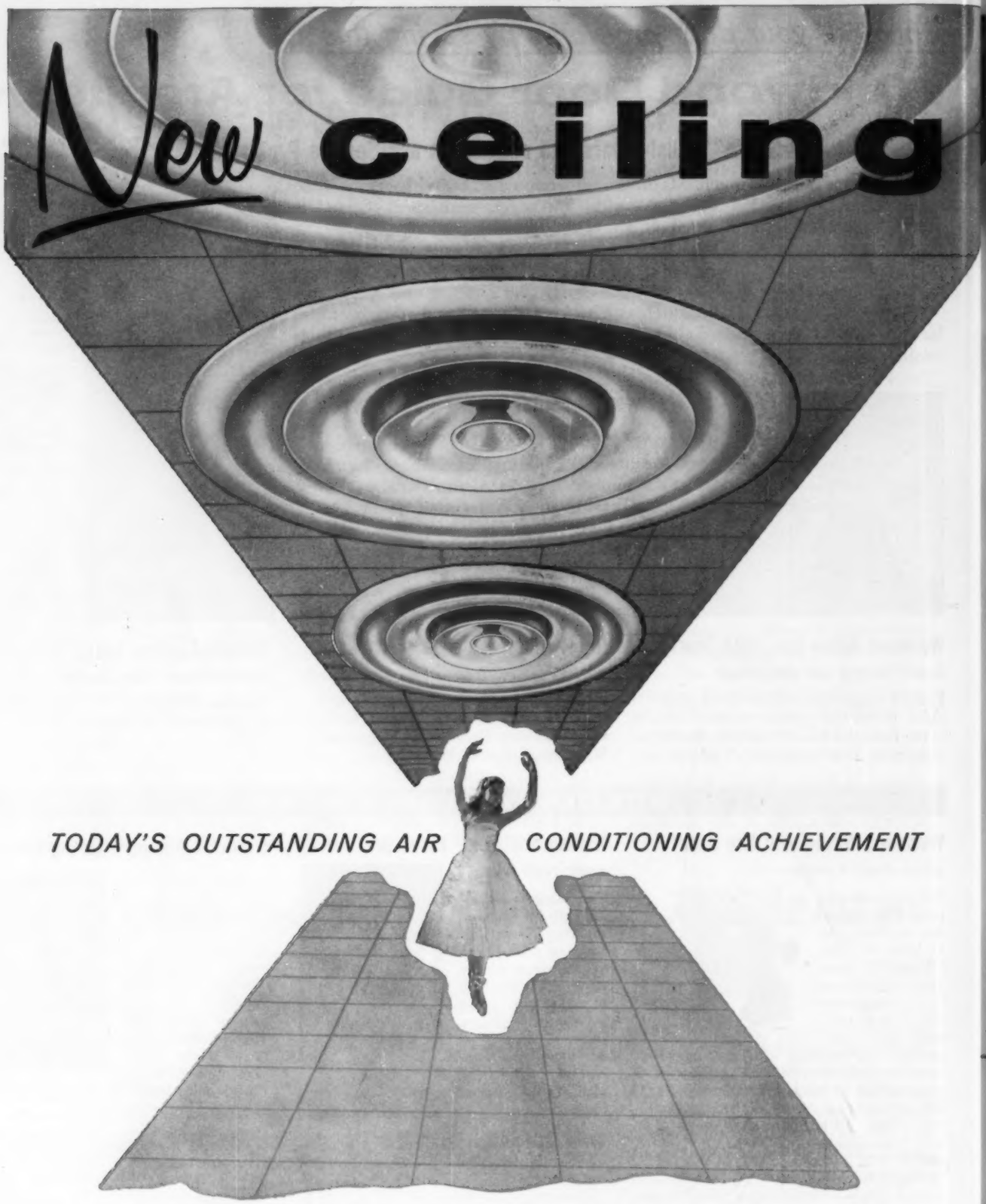

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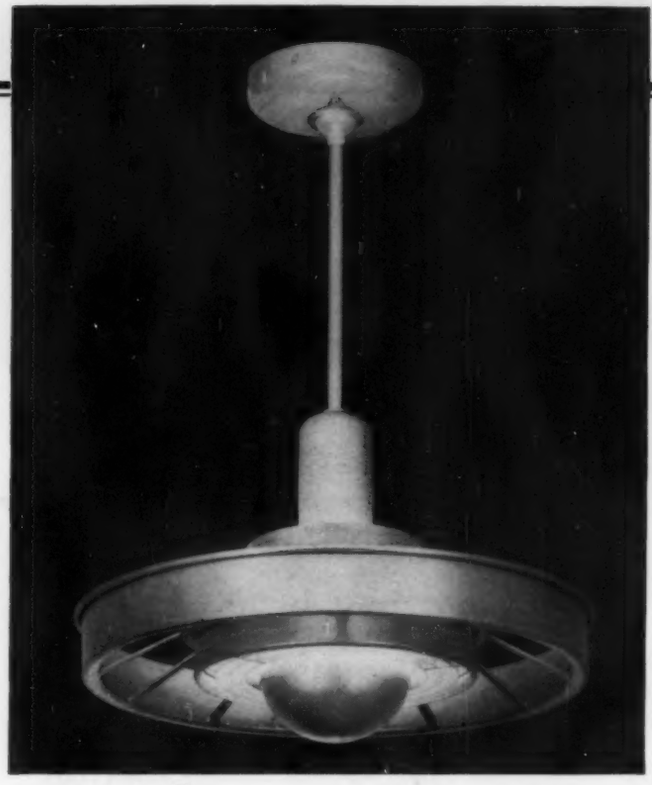

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REQUIRED READING

(Continued from page 56)

SCHOOL PLANNING

valuable. Moreover, the book raises by indirection many questions which would seem to be rather central in the problem of building better schools.

Architects, engineers and educators alike will find much of use to them in the present *Handbook*. The material is presented without critical comment so that one might infer that it represents good practice throughout. This is not necessarily so and the reader will have to make his own analysis of the appropriateness of the multitude of suggestions for his own particular needs.

In part and for a more limited audience — school administrator, educational consultant, and graduate student — *From School Program to School Plant* does address itself to some of the major policy questions which have implications for building design and facilities. It is strongest when it is discussing these issues and when it is describing the functions of the architect and the phases of his work. When it is concerned with contracts, bidding and specifications it is generally descriptive and lacks the definitive detail of the *School Planning Handbook*. However, for the school administrator who is to embark on a building program there are comments about a variety of space problems — size, location, and multiple use — which should be of assistance to him in developing his program.

Both books are helpful contributions to the rapidly growing literature on school building. The *Handbook*, particularly, is part of a continuing development of a technical series. It is to be fervently hoped that, in the hands of boards of education, creative design will not be stifled by an acquired psuedo-technical expertness on the part of those whose role is centrally that of policy development and formulation. We need board members and administrators who are concerned with the broad issues of education because these issues are, in fact, those of our society itself, and who will rely on the competence of their technical staffs and consultants for the myriad details of technical study, analysis and operation.

For the laymen — board members, PTA groups and citizens' advisory committees — the book on school design remains to be written. But perhaps it cannot be written. Words may be inadequate to communicate what essentially must be experienced.

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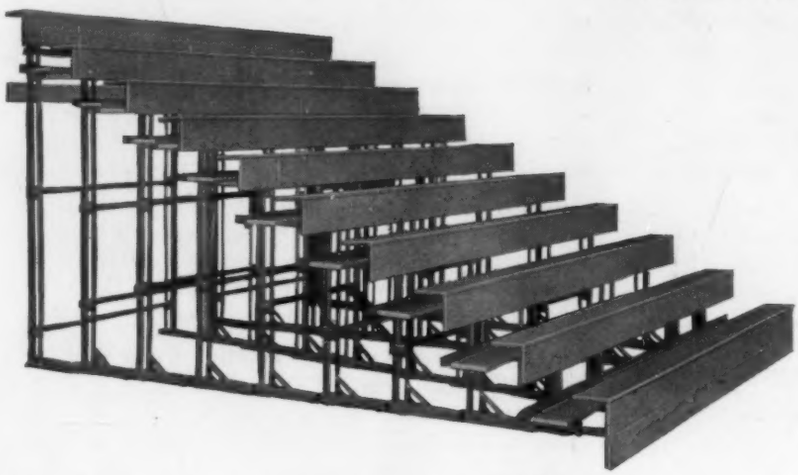

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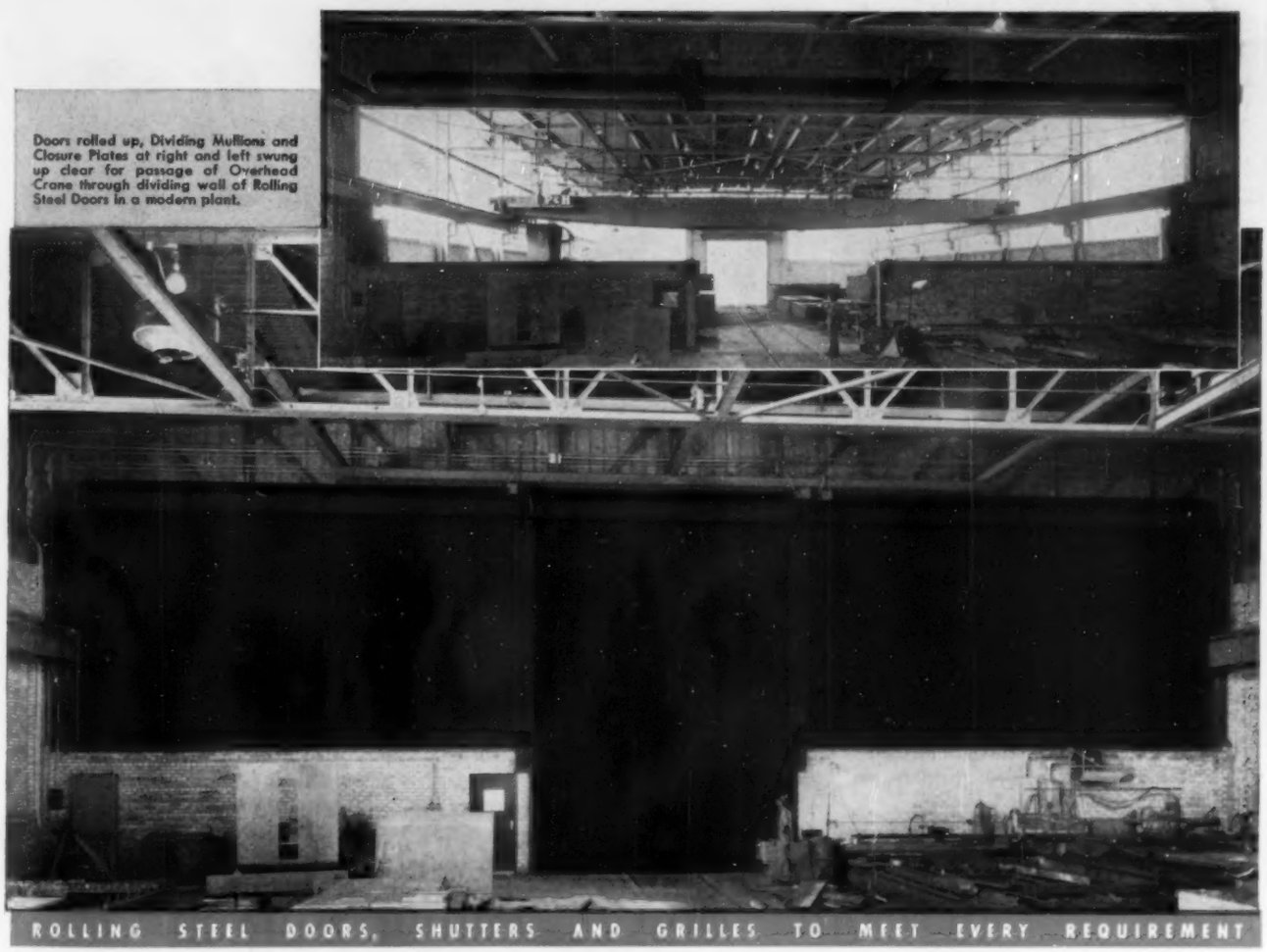

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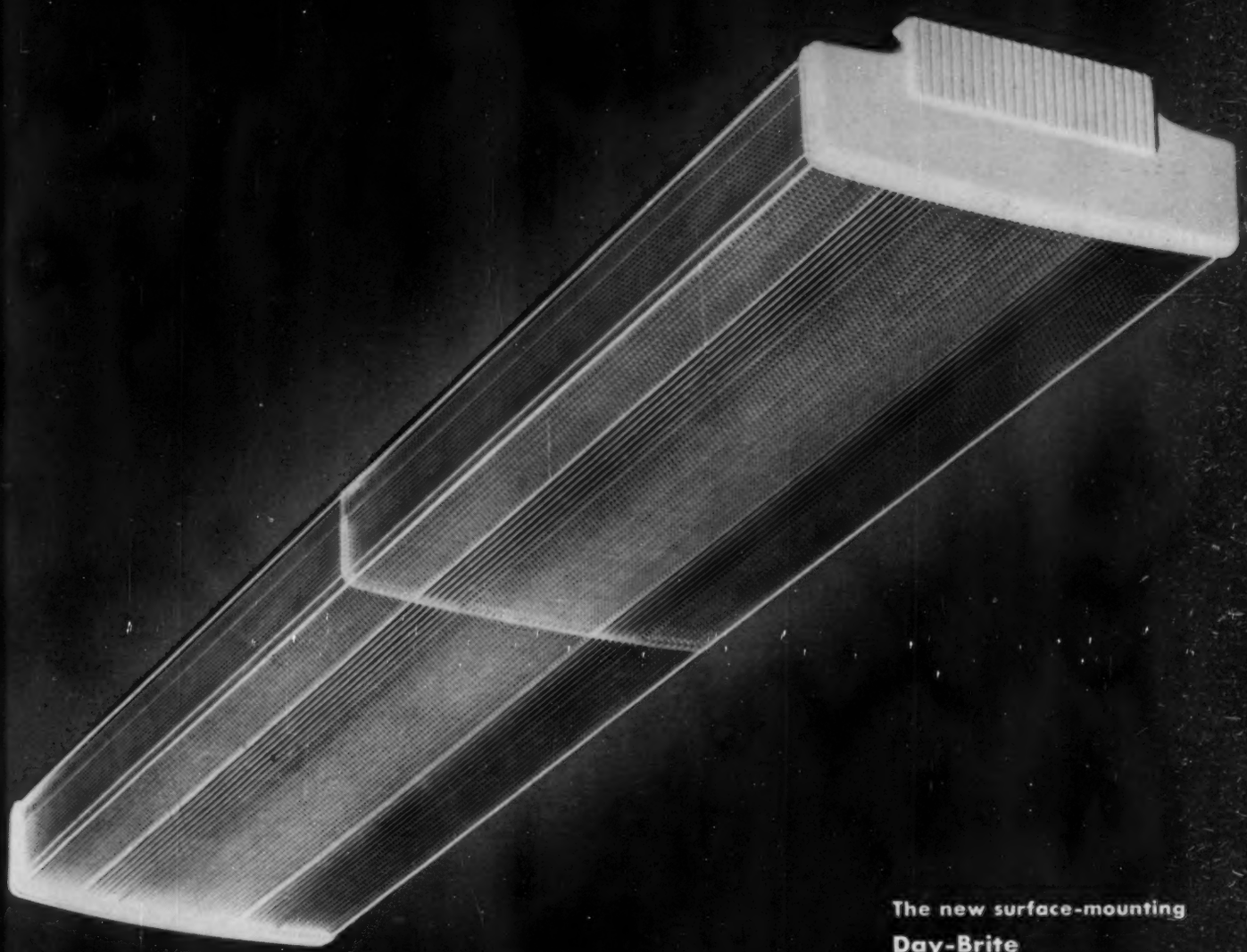

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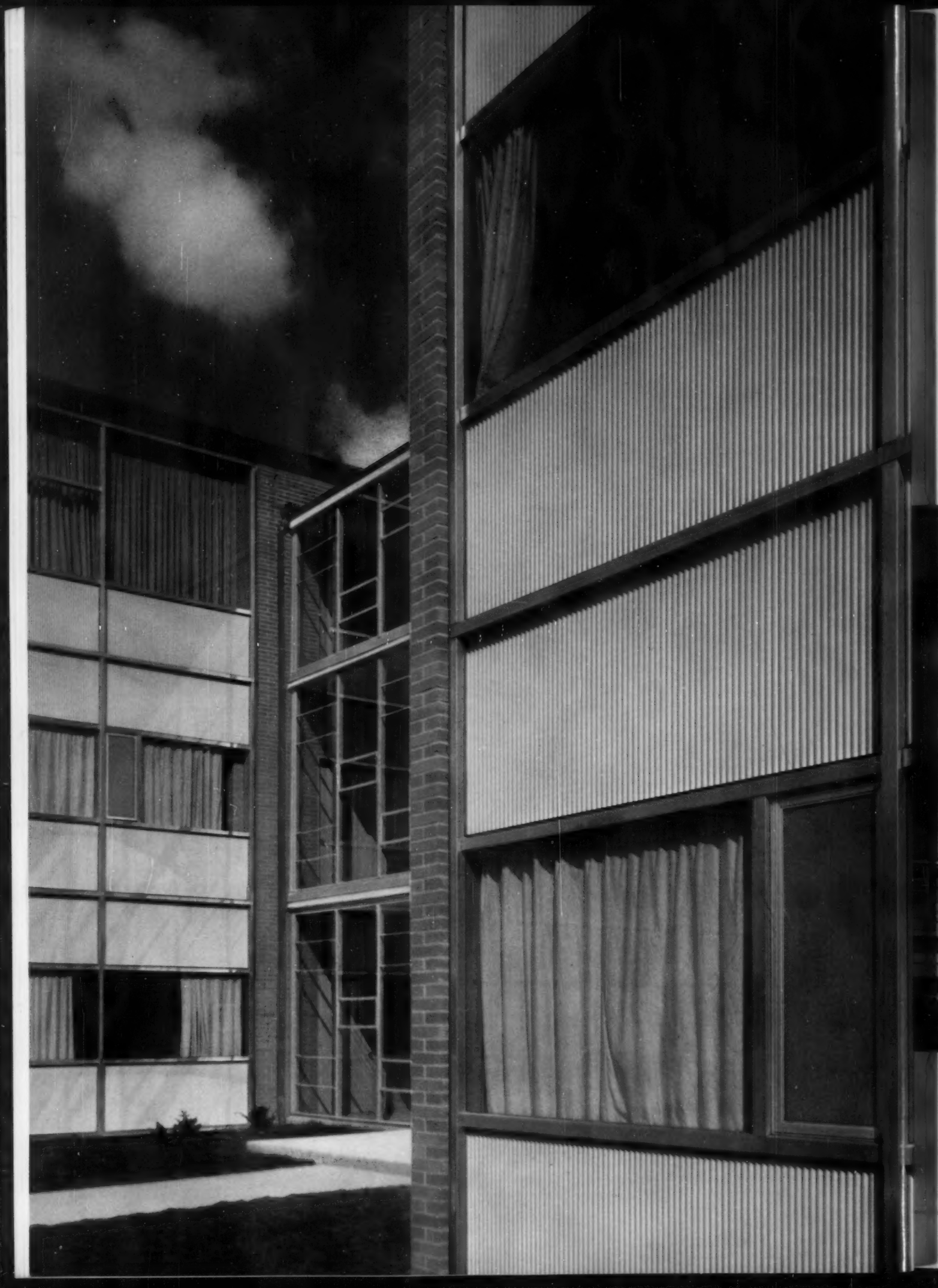

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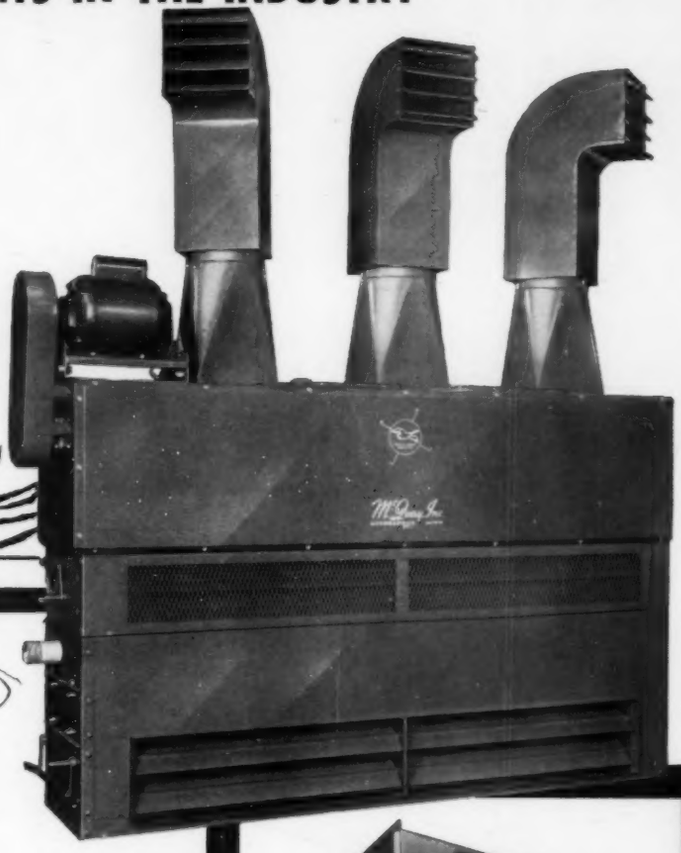

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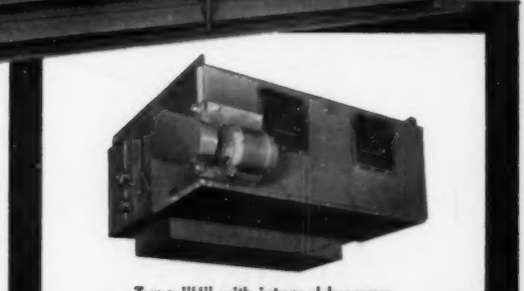

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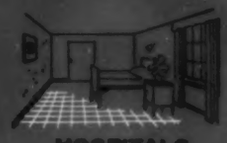

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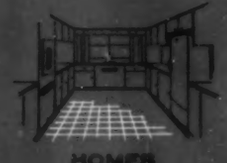

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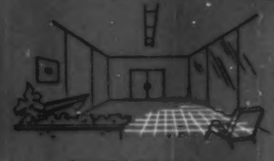

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Dimensioned for standard modular sizes, Marlite plastic-finish paneling fits right, looks right, goes up fast with minimum cost "in place." This means wider flexibility in the design of imaginative interiors . . . greater economies all along the line. And Marlite means lower maintenance, too. The baked melamine plastic finish wipes clean with a damp cloth; stays like new for years. For modern commercial, as well as residential interiors, plan on modular Marlite . . . available in Planks, Blocks, large Panels, and hollow-core Korelock in a wide range of distinctive Loewy colors, wood and marlite patterns. Consult your building materials dealer, refer to Sweet's File, or write Marlite Division of Masonite Corporation, Dept. 805, Dover, Ohio.

that's the beauty of **Marlite®**

plastic-finished wall and ceiling paneling

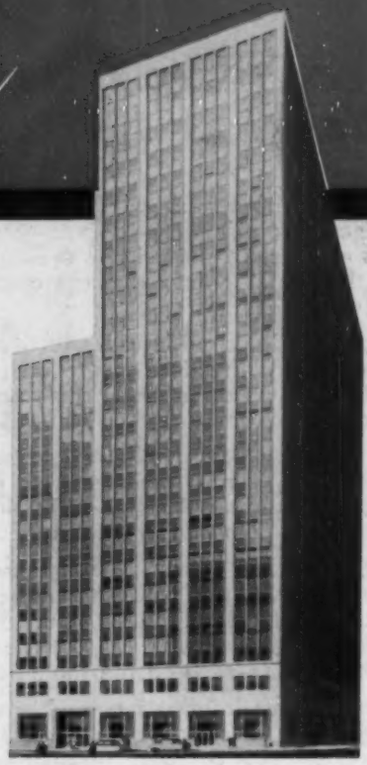
OPERATION '56 the year to FIX HOME IMPROVEMENT

MARLITE DIVISION OF MASONITE® CORP.

A MAJOR NEW BUILDING INTRODUCED THIS *Popular Lock Design*

San Francisco's new Equitable Life Building is the most modern addition to that city's famous skyline . . . as new and modern as Schlage's graceful Tulip lock design, introduced for the first time throughout the Equitable Building to provide the individual locking requirements for approximately 2,500 doors. Designed by Schlage to reflect the clean, modern lines and functional simplicity of contemporary building, the Tulip maintains the high standard of Schlage stylings and workmanship . . . recognized by architects and builders who are placing Schlage locks on the doors of commercial and residential buildings throughout the world.

For the last word in lock designs, write for Schlage's 4-color Lock Fashions Brochure 651-A6.



San Francisco's Equitable Life Building. *Architects:* Loubet & Glynn; *General Contractor:* Dinwiddie Construction Co.; *Hardware Supplier:* E. M. Hundley Hardware Company.

®SCHLAGE®

SCHLAGE LOCK COMPANY
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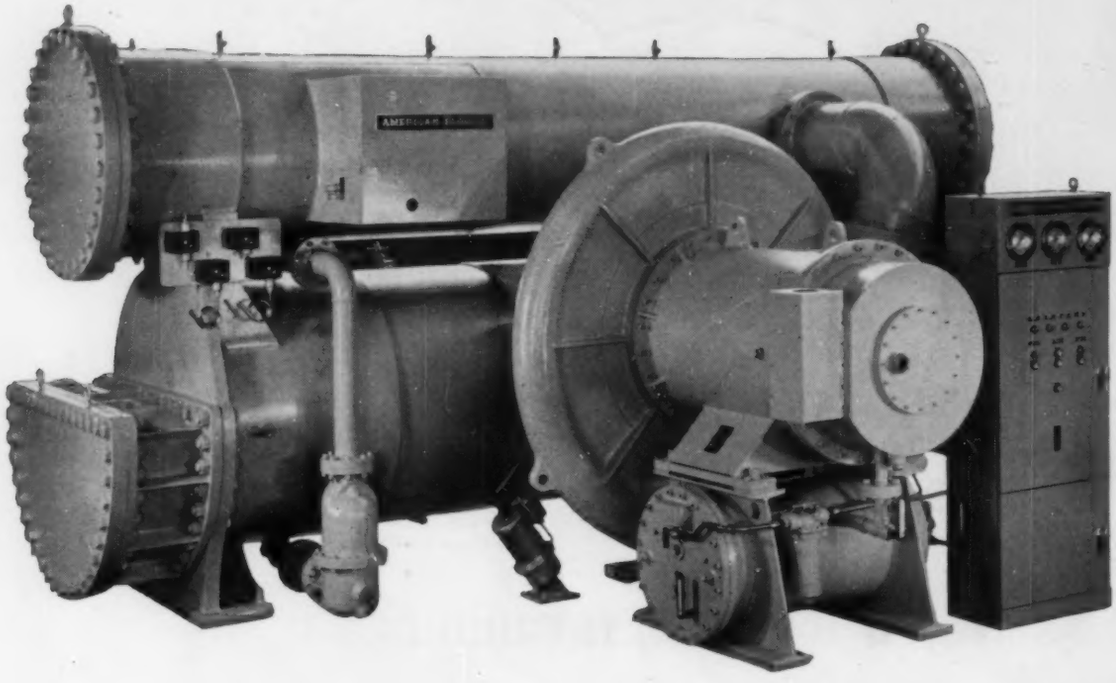
Address all correspondence to San Francisco

AMERICAN BLOWER
AIR CONDITIONING



Tonrac* maintains chilled-water temperature–regardless of load!

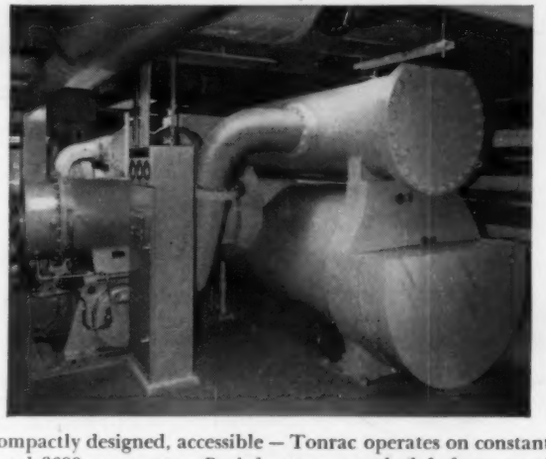
American Blower's single-stage hermetic centrifugal refrigerating machine – Tonrac – automatically adjusts refrigerating capacity to cooling needs. "Tracking the load," Tonrac operates efficiently from full load to no load.

Variable inlet guide vanes regulate the quantity, velocity and direction of the refrigerant gas flow to the compressor in direct response to the amount of cooling load.

Single-stage design eliminates two or more compression stages with their inherent cross-over losses. This, plus improved diffusion in the volute casing, insures optimum performance, quieter operation.

What's more, Tonrac's *single-level* construction requires no built-up bases. A compact, self-contained unit ready for installation, Tonrac may be located wherever the floor will support the charged weight of the system – even on the roof.

For further information on Tonrac, contact our nearest branch office, or write us direct. American Blower offers a complete product-line – from Packaged Air Conditioners, to Multi-Zone Units and Central Station Air Conditioners – to meet *all* your air conditioning requirements! American Blower Corporation, Detroit 32, Michigan. In Canada: Canadian Sirocco Company, Ltd., Windsor, Ontario.



Compactly designed, accessible – Tonrac operates on constant-speed 3600 rpm motor. Push-button control (left foreground) initiates quiet, efficient, automatic operation.

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Division of AMERICAN-Standard

Air conditioning equipment for every business

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. . . for long-lasting quality in lighting

Styling Building, General Motors Technical Center, Detroit, Michigan. Modular lighting units have 5' x 5' pan type diffusers of PLEXIGLAS acrylic plastic. Architects: Eero Saarinen & Associates. Architects-Engineers: Smith, Hinchman & Grylls Inc.

When lighting systems are based on diffusion through PLEXIGLAS® they have the efficiency, permanence and beauty that add up to illumination of the highest quality. This acrylic plastic provides superior transmission and diffusion of light. It is rigid, strong and durable, with exceptional freedom from discoloration on long exposure to fluorescent lamps. At the General Motors Technical Center, nearly seven acres of PLEXIGLAS attest its advantages as a lighting material. Write for our booklet, "Architectural Lighting with PLEXIGLAS." It shows many of the diffuser shapes and designs that are available from lighting equipment manufacturers.

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Wherever there's a hydrostatic head or danger of water seepage Karnak Membrane Waterproofing is the best protection you can get.

Karnak membrane fabric is saturated so that it is non-sticking and unrolls easily... to the very end. There is no waste. It "works" faster, lays on wrinkle-free..saves labor cost on the job.

Open mesh, long-fiber-cotton cloth, saturated with specially prepared asphalt so as to leave the mesh open, is layered on the job with alternate moppings of highly refined, ductile asphalt. The open mesh allows the mopping asphalt to penetrate and interlock the layers. This provides a firm, mechanical bond that resists abrasions, settling and cracking thus maintaining water resistance through the life of the structure.

The layering of fabric and asphalt is the only method of waterproofing that insures proper thickness of asphalt throughout the application. For normal application with hydrostatic head up to 15 feet, two plies of fabric are sufficient; hydrostatic head of 15 to 20 feet takes three plies; four plies are sufficient to waterproof any class of work regardless of hydrostatic head.

Whatever *your* waterproofing problem, Karnak will prove best. Bridges, buildings, tunnels, retaining walls, viaducts, swimming pools, all need and use Karnak. The Merchandising Mart, Chicago, Ill., used Karnak over twenty-five years ago... the Fairless Works of U.S. Steel used it last year. Specify Karnak on your next waterproofing job.

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FROM CURTAIN WALLS TO LETTERING ON TOWER... ALUMINUM FABRICATED BY

CUPPLES

Home Office Building
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San Antonio, Texas

Atlee B. and Robert M. Ayres, Phelps & Dewees & Simmons, Architects, San Antonio

Henry C. Beck Company, General Contractor, Dallas

This imposing Texas marble and aluminum structure points up both the versatility of aluminum and Cupples' complete facilities for design and fabrication.

These Cupples' aluminum products are used in this contemporary office building:

- **North and South Walls.** Aluminum curtain wall—tubular projected windows, thermopane-glazed, set over blue panels. Vertical tubular mullions and continuous extruded solar shades.
- **East Elevation.** Vertical aluminum fins contrasting with dark gray aluminum panels and tubular rails.
- **West Elevation.** Balconies of aluminum extrusions with contrasting cast aluminum panels on the exterior, blue panels with aluminum base trim on the interior.
- **Other Cupples' Aluminum Items.** Doors and storefronts, extruded vertical adjustable louvers, eggcrate canopies, column covers, coping, ornamental aluminum rails and cast aluminum lettering on tower. All in alumilite finish.

If your plans include aluminum—whether for curtain walls, windows, doors, ornamental products, or Alumi-Coustic grid systems for suspended ceilings—we welcome your inquiries. You'll discover that Cupples' high standards of design and manufacture always meet or exceed your most rigid requirements without premium costs.
Our catalogs are filed in Sweet's.

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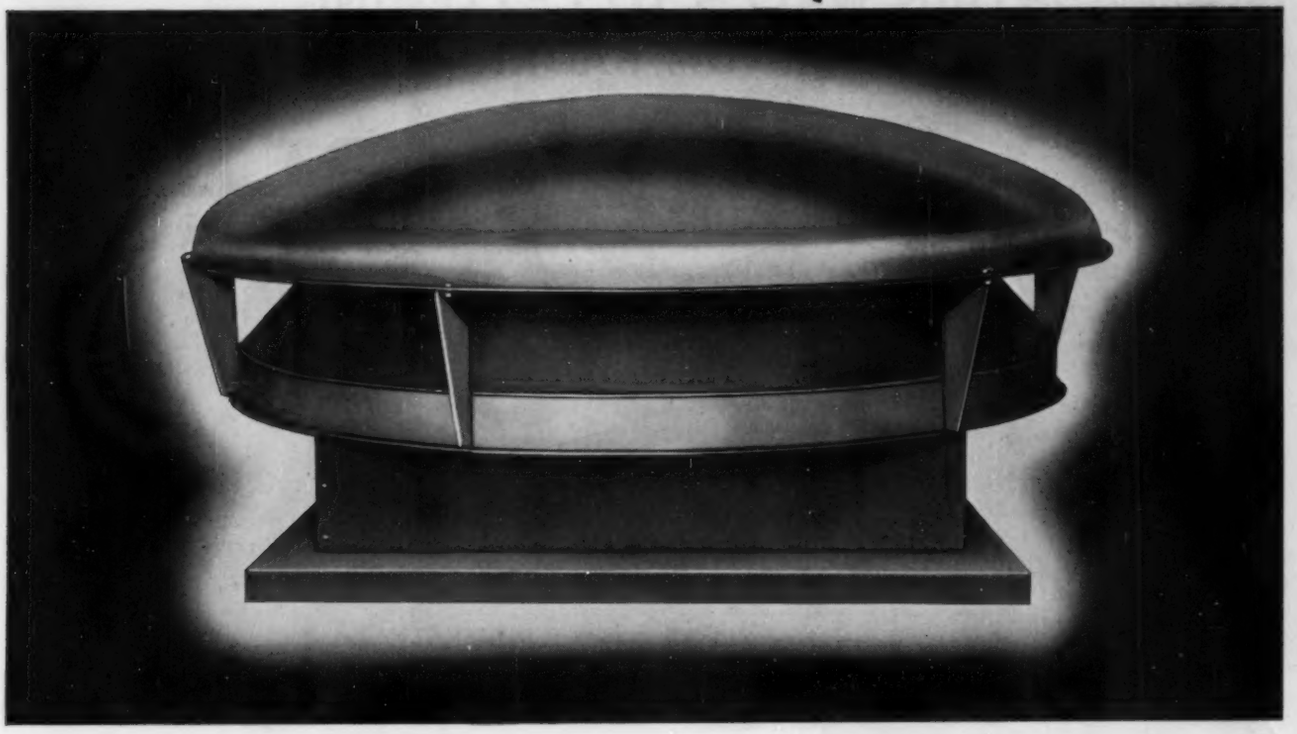

NEW *Allen* "I-LINE" ROOF FAN
Gives You the *LOW CONTOUR* You Want

. . . and with the

FEATURES YOU WANT

- Low silhouette
- Low noise level
- High efficiency
- Rigid construction
- Low first cost
- Low operating cost
- Vibration-free for long life
- Easy to install (no extra base needed)
- Easy accessibility for lubrication, inspection and cleaning
- Versatility (supply or exhaust units)
- Wide capacity range (400 to 34,000 cfm)
- Choice of two types of standard base

The new *Allen* "I-Line" Roof Fan meets the architect's demand for an attractive unit that hugs the roof without sacrificing the high efficiency required by engineers. This is accomplished by a circular spun hood and fan venturi with a directional baffle so arranged in relation to the propeller as to provide maximum efficiency with minimum over-all height.

In addition, the new "I-Line" design makes installation exceptionally easy and the hinged hood simplifies maintenance and cleaning.

The *Allen* "I-Line" Series Roof Fans are available with *Direct Drive* (400 to 34,000 cfm) or with *Belt Drive* (4,000 to 20,150 cfm).

•

See Sweet's (8b/Al) or write for catalog that gives you specifications and complete performance data.

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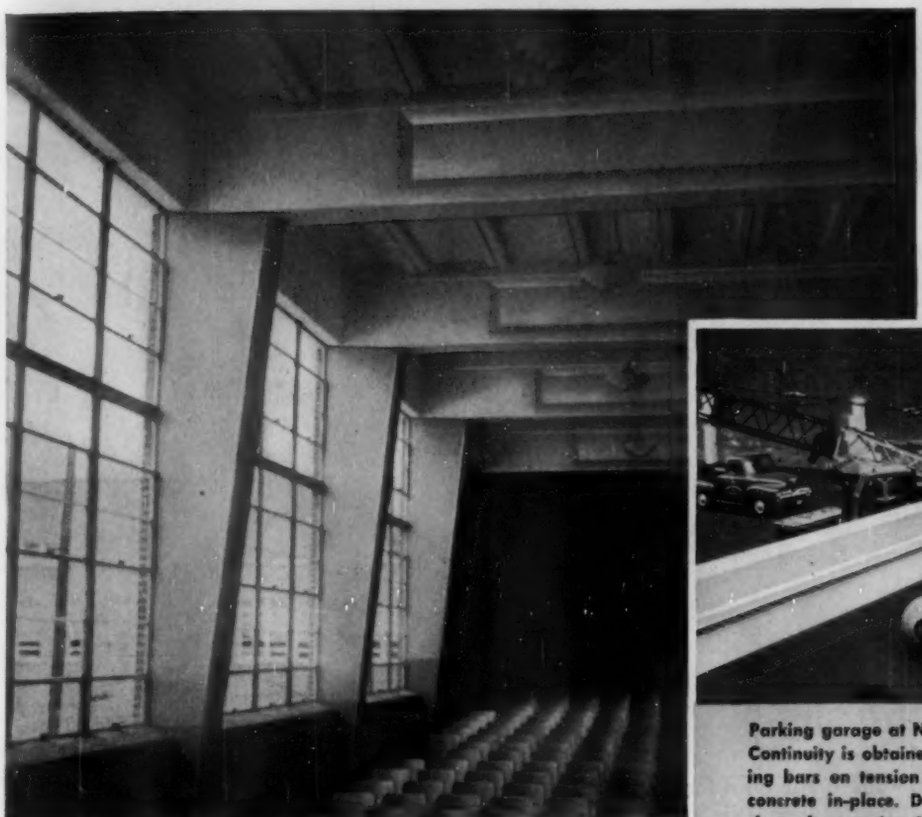
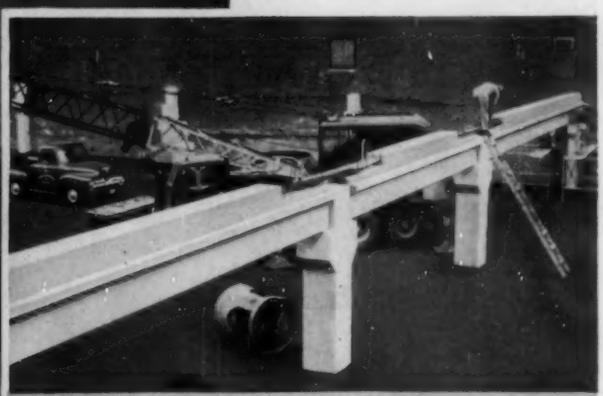
Use precast prestressed concrete!

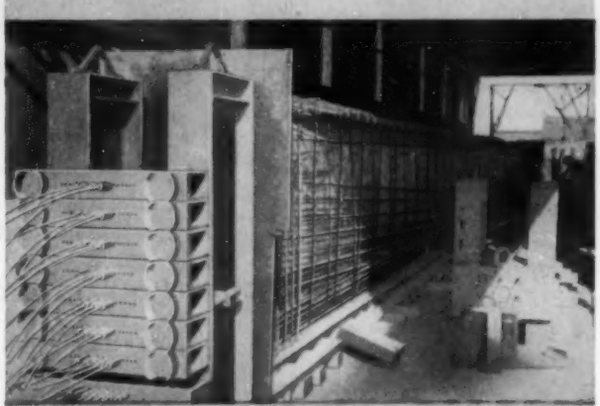


A gymnasium at Lynchburg, Tennessee. Rigid frames on 20-ft. centers. Span 62 feet. Prestressed girder of rigid frame is 3 feet deep . . . connected to precast reinforced columns and made continuous by welding reinforcing bars projecting from each member. Deck between frames is 6-in. deep prestressed concrete channels.

All structures illustrated were designed by Ross H. Bryan, Consulting Engineer . . . girders fabricated by T. L. Herbert & Sons . . . joists, slabs and channel decks fabricated by Nashville Breeko Block and Tile Company, all of Nashville, Tenn.



Parking garage at Nashville, Tenn. Girders span 38 feet. Continuity is obtained over columns by lapping reinforcing bars on tension side and pouring small amount of concrete in-place. Deck between girders is prestressed channels spanning 28 feet.



Girder for gymnasium at Milan, Tennessee. 100-ft. span girders 5½ feet deep spaced 20 feet on centers. 7-wire strands are deflected to approximate parabolic cable curve desirable on long spans. Strands are pre-tensioned, deflected, and then the concrete is poured. Deck is 8 inch x 12 inch prestressed block joists on 5-ft. centers and covered with precast lightweight slabs.

SINCE THE FIRST simple span bridge in the United States was completed in 1950, plant-fabricated prestressed concrete members have come a long way. As pictured here, all the advantages of continuous girders, rigid frames and long spans can now be combined with the economy and durability of precast pre-tensioned bonded prestressed concrete members.

Today, because of continuous development and participation in all types of prestressed projects, Roebling is the foremost supplier of tensioning elements in the industry. Why not turn to "headquarters" for suggestions and advice on specific applications? Write Construction Materials Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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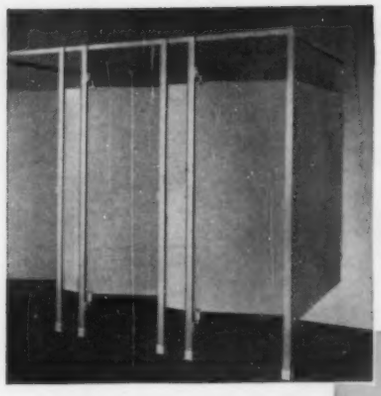

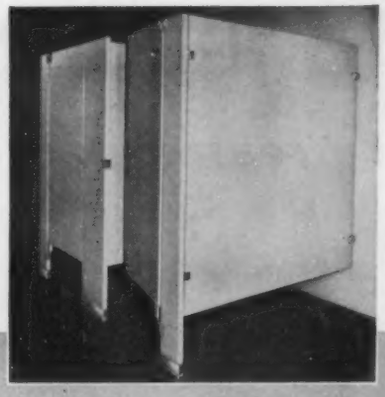

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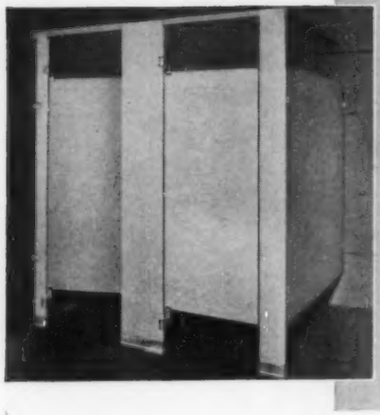

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with diffusing panels of Du Pont LUCITE®

Fixtures for new Plainfield Trust Company branch by Marlou Lights Inc., Fanwood, New Jersey. LUCITE extruded by Plastex Company, Columbus, Ohio.

The new branch of the Plainfield Trust Company in Fanwood, New Jersey, incorporates lighting that is both efficient and attractive. Fixtures of LUCITE acrylic resin are installed ophthalmically designed to diffuse light evenly with an absolute minimum of light absorption. The units create an inconspicuous diffused glare-free, yet bright illumination that makes for relaxed efficiency.

Panels of LUCITE are strong, durable, free from discoloration and dimensionally stable. In addition, LUCITE is light in weight, easy to handle and install.

Because of these outstanding features, LUCITE is being utilized in practically all types of modern lighting installations: modular light diffusing panels, large-area lighting, low-brightness lenses for troffer and pendant luminaires, side panels, cove-lighting enclosures, and protective covers for outdoor lighting fixtures.

SEND FOR FREE, NEW BOOKLET. This new 12-page illustrated booklet describes all the latest property and application data on LUCITE acrylic resin for lighting. For your free copy, write E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Room 738, Du Pont Building, Wilmington 98, Delaware.

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The manufacturer of this sheeting extruded of LUCITE® acrylic resin has conformed with the standards of control for low shrinkage and uniform caliper established by E. I. du Pont de Nemours & Co. (Inc.)

• *This "Quality Controlled" label may be used only by qualified extruders of Du Pont* LUCITE *acrylic resin. It assures the lighting industry that the extruded material conforms to standards for low shrinkage and uniform caliper established by E. I. du Pont de Nemours & Co. (Inc.).*

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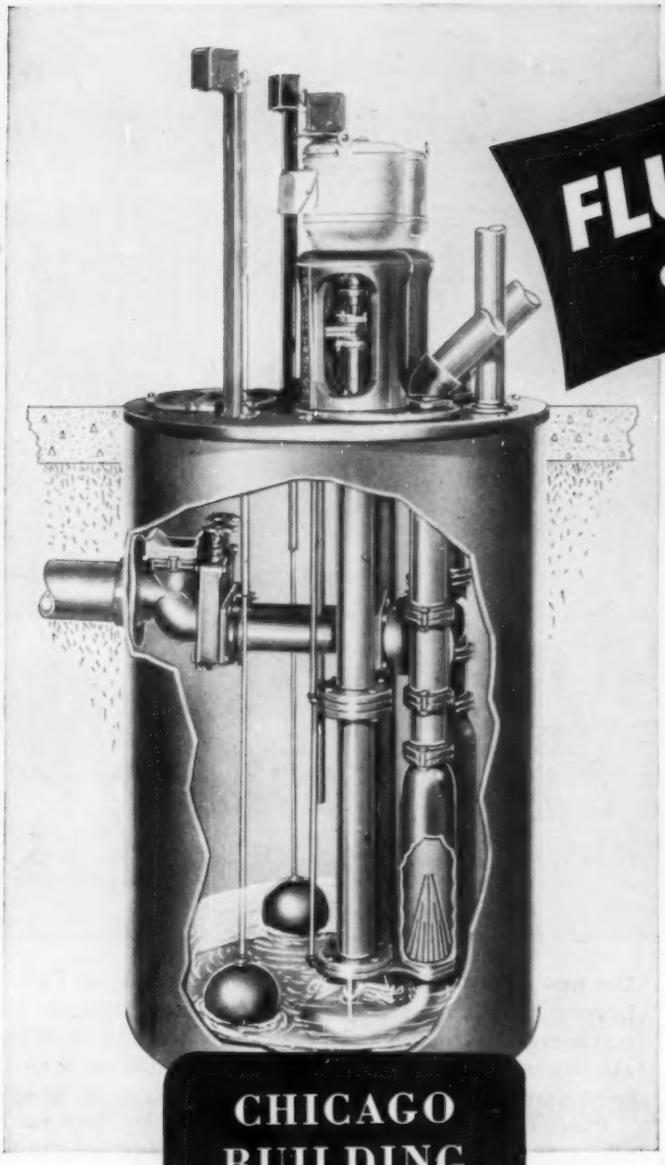

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CHICAGO BUILDING PUMPS

"Flush-Kleen" is the only true clog-proof sewage ejector. As proof, more than 12,000 have been installed and not one has ever clogged! That's because the impeller handles liquids, only. All coarse matter is strained out, then back-washed from the strainer into the higher level sewer. All other air or liquid ejectors have working parts in contact with coarse material. That's what causes clogging.

"Flush-Kleen" ejectors are usually installed in duplex units that operate alternately. While one pump operates, sewage flows into the wet basin through the idle pump. A strainer ahead of the impeller retains all coarse matter. (See cutaway) When the idle pump starts, the coarse sewage matter in the strainer chamber is flushed into the discharge pipe with liquid sewage. A special check valve prevents discharge back into the inlet line.

Engineering data showing how to determine sewage ejector capacities for any type or size of building are available. Write to Dept. E for your copy, today. Illustrated: The Type "F" submerged "Flush-Kleen" sewage ejector.

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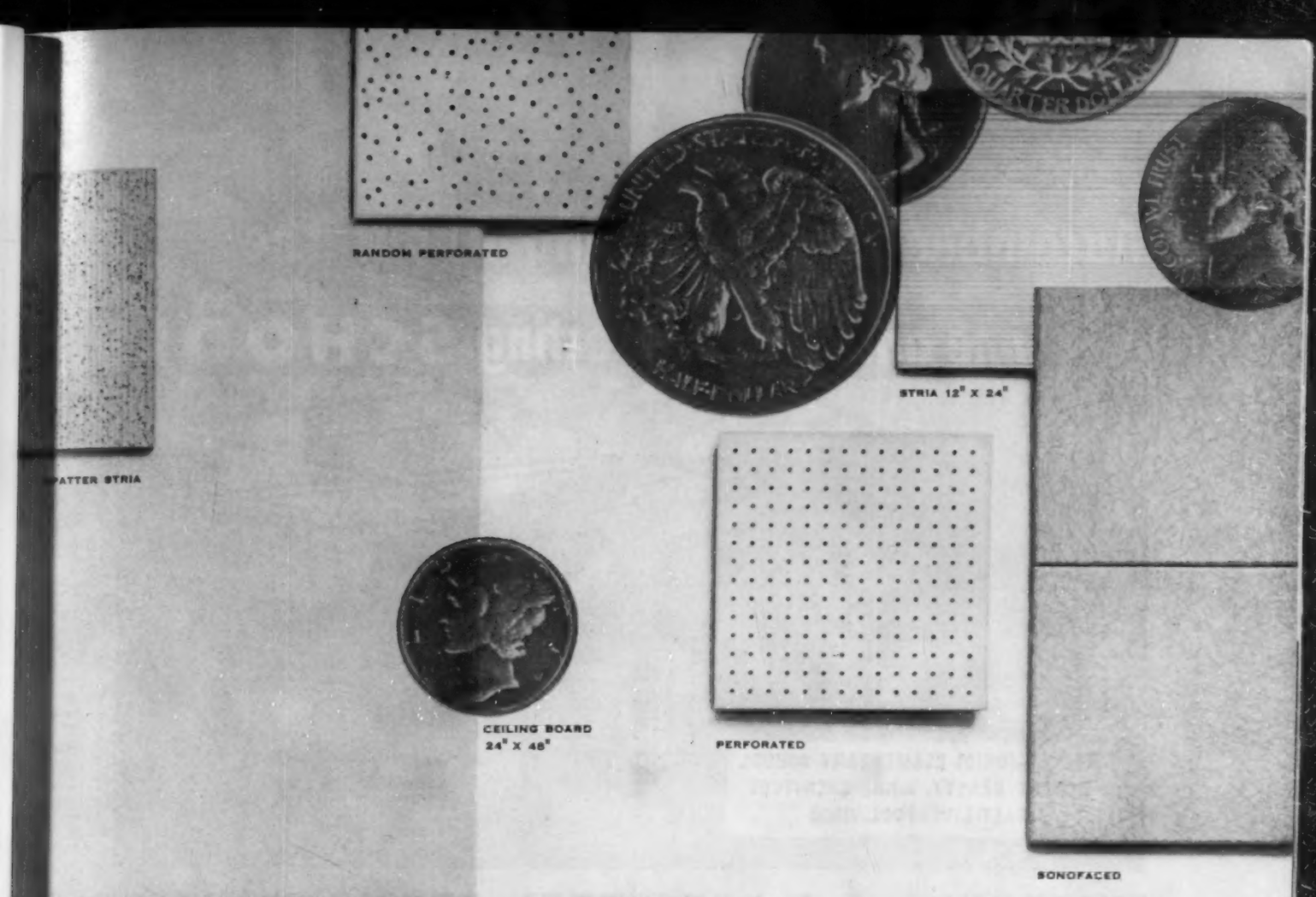

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with a built-in fire department!

Did you realize that Fiberglas* Sound Control Products offer the lowest-cost fire-safe acoustical ceilings on the market? And there's a wide line of patterns, textures and colors available; ceilings to fit every building budget, every decor.

The savings continue through long years of service—easily installed, easily maintained, the inorganic ceilings won't shrink or swell, bag or sag. If you'd like to know more about extra-value Fiberglas Sound Control Products, write: Owens-Corning Fiberglas Corporation, Dept. 68-H, Toledo 1, Ohio.

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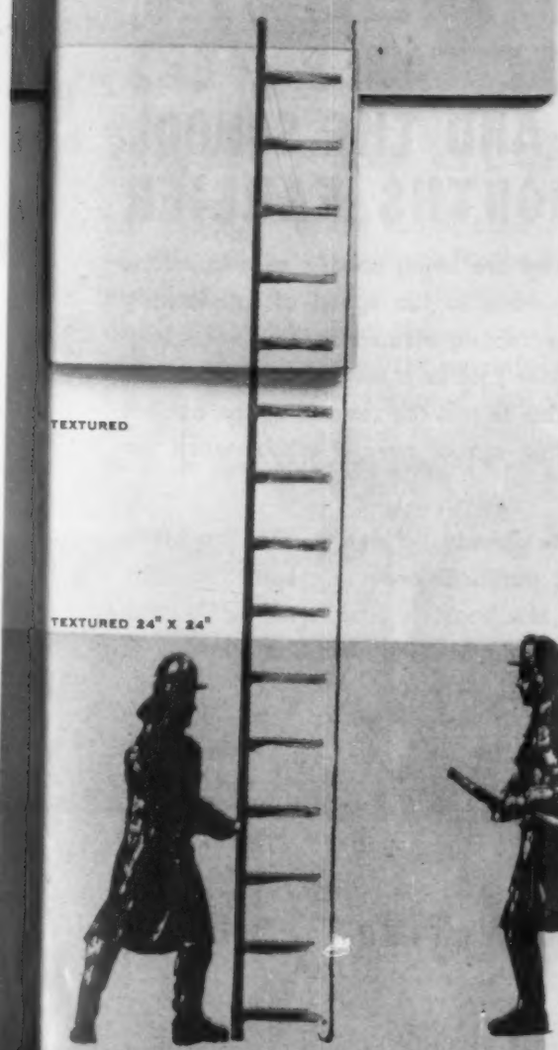
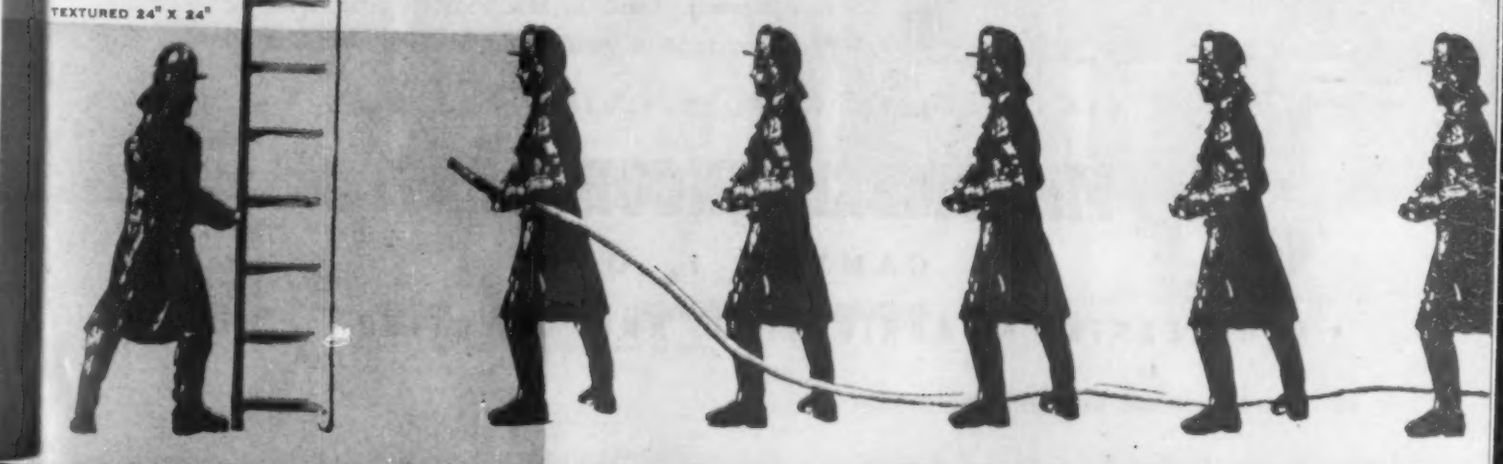
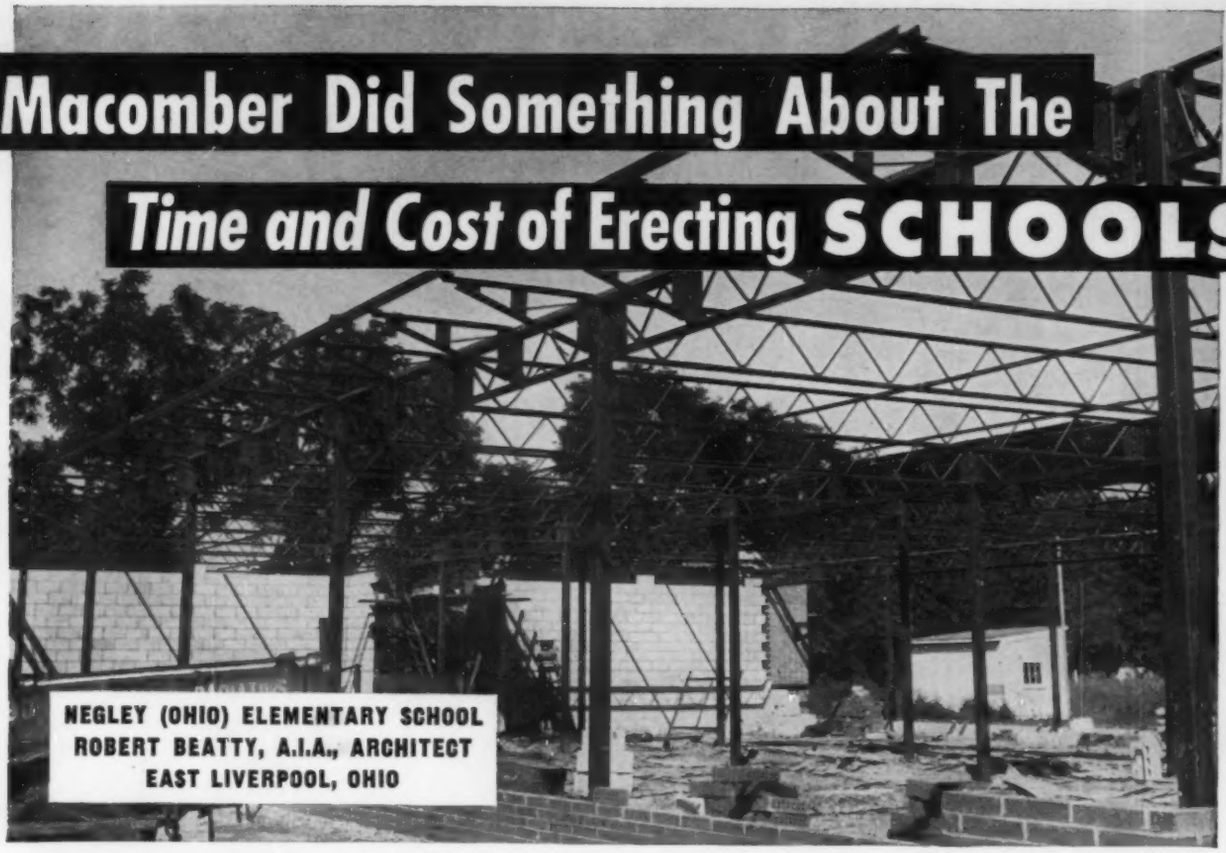




Macomber Did Something About The *Time and Cost* of Erecting SCHOOLS



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Schools all across the country are being erected at tremendous savings — per square foot — due to the speed of interlocking structural members. Large rambling elementary and secondary schools are erected and under roof in a few days when Architects design with V-LOK. This is just the reverse of the ancient practice of eventually putting a roof over a school when the walls are completed.

This fundamental difference speeds up every other operation and non-bearing walls and partitions provide greater flexibility for future needs. Send for this booklet. It sells the whole idea of V-LOK savings to your Board and Building Committee.

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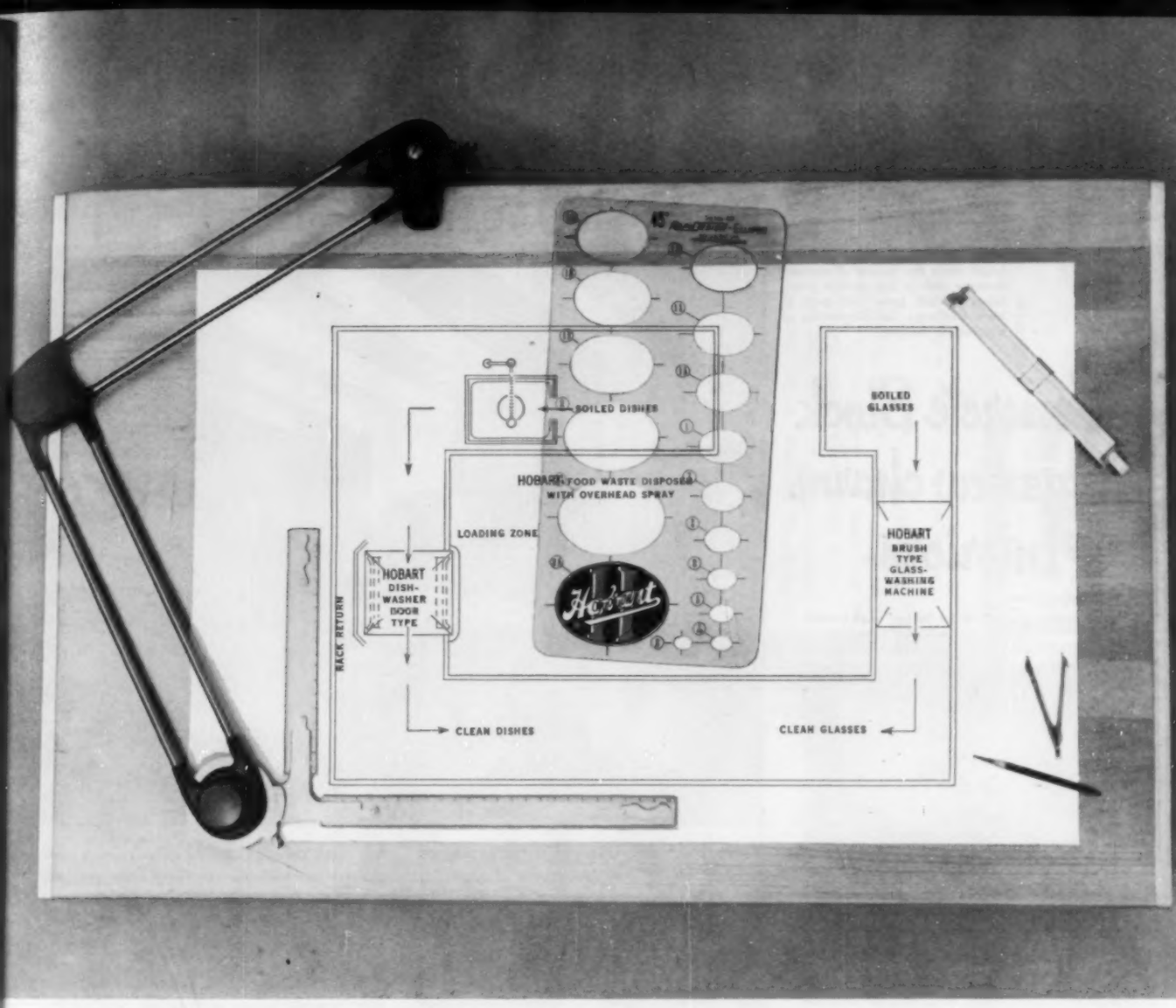

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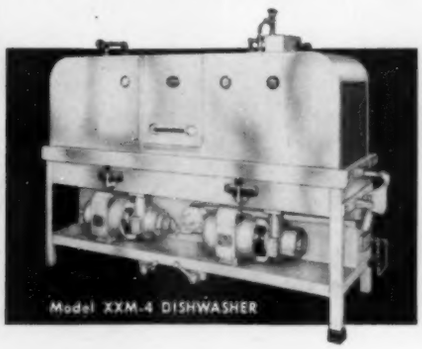
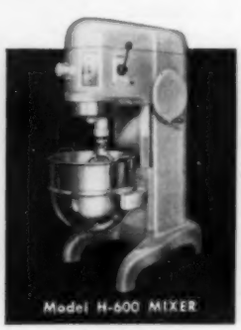
Hobart equipment and well-planned layout—these are your two basic ingredients for the best in kitchen operation.

Architects and kitchen designers find Hobart best to work with because of the unrivaled broadness of the line and the convenience of local Hobart representation. With the most machines in the greatest range of sizes and capacities, it's easy to meet the projected kitchen capacity while dealing with only one source.

And when this source is Hobart, with the greatest name for quality products, guarantee, and service in the industry—your choice of Hobart means satisfaction to your client for many years to come. Ask for catalogs, brochures, specification sheets . . . . . ***The Hobart Manufacturing Company, Troy, Ohio.***

Model 6115 PEELER available with cabinet base and trap accessory


Model XXM-4 DISHWASHER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Trademark of Quality for over 55 years

The World's Largest Manufacturer of Food, Kitchen and Dishwashing Machines

THE NEW BEAUTY OF CONCRETE MASONRY

(right) Note the beauty of exposed masonry wall in this modern living room. Various types and sizes of block challenge the imagination of architect or builder.

Concrete Block brings new charm to Interiors

(below) "Pillar Design" wall created with 8" x 8" x 8" Bull Nose block in this 1955 Home Show model home.

It's surprising what can be done with a little ingenuity . . . and concrete block! For many years, wood and plaster were regarded as the indispensable ingredients in any interior design. Masonry was neglected or confined to fireplaces. An occasional daring designer would offer a block interior, but without getting many takers.

All that changed with the introduction of Vibrapac block. This versatile material provides so many design opportunities that it quickly caught the popular fancy. Architects, designers and builders were quick to realize its possibilities. Today the use of Vibrapac block has made possible some of the most beautiful and practical home construction to be seen anywhere in America.

The simplest homes as well as the costliest structures can benefit from the adoption of concrete block construction. In fact, the adaptability of Vibrapac block is almost limitless. It is ideal not only for living rooms, but for bedrooms, kitchens, recreation rooms, corridors . . . for every living space from basement to attic.

The ready acceptance of Vibrapac block is one of its greatest advantages. In its wide range of colors, sizes, and finishes, including split-block, home owner, architect or builder can find something to match almost any interior design . . . often a suggestion for an entirely new interior treatment.

Just a simple variation in the laying of concrete block can completely change the appearance of a home or building. Stacking block horizontally or vertically, laying chimney block on edge and other techniques offer many opportunities for new effects. In fact, standard home designs can be varied almost endlessly by taking advantage of the artistic possibilities inherent in Vibrapac block.

(above) A well-known architect preferred exposed masonry walls for this cozy corner in his own home.

The economy of this material has also contributed to its spreading popularity. Vibrapac block can be handled and laid with ease, speed and accuracy, providing marked savings in time and labor. Produced by automatic Vibrapac machines, the block are dependably uniform, naturally moisture resistant and effectively soundproof. And they last a lifetime.

Architect, builder and home-owner will find the story of Vibrapac block interesting and challenging. Complete literature on request. Write Besser Company, Box 173, Alpena, Michigan, USA.

(above) Kitchen in concrete masonry constructed apartment building. Note exposed lightweight units.

•

(right) A variety of block wall patterns add to the beauty of this master bedroom.

A 6024-1 PA

(Advertisement)

No. 2 in a series

something *Special* by Curtis

Photo by Don Berg, Minneapolis

INTEGRATED LIGHTING

(or how Curtis Staff Designers & Engineers, through close collaboration with the architects, helped solve a complex problem.)

GENERAL INFORMATION:

The lighting system pictured at the left is typical of the entire installation at the American Hardware Mutual Insurance Company's new home office. Surface characteristics of this area are:

CEILING:	mineral fissured tile	off-white	78% RF
WALLS:	plaster	grey	40% RF
FLOOR:	Armstrong Linotile	light grey	45% RF
DESKS:	metal with lineolum tops	battleship grey	35% RF

THE PROBLEM:

To design a low-brightness, glare-free, high level illumination system to be the basis of an integrated ceiling system including lighting, sound absorbtion elements and ventilating facilities; a system that would reduce the brightness ratios between luminous and non-luminous elements to a minimum and would provide maximum accessibility and mobility of all components for maintenance, repairs and future relocations.

Turn the page for the solution to this problem.

AMERICAN HARDWARE MUTUAL INSURANCE CO.

MINNEAPOLIS, MINNESOTA

ARCHITECTS:
THORSHOV & CERNY, MINNEAPOLIS
KENNETH WHITEHEAD, PROJECT ARCHITECT
JOHN G. RAUMA, DESIGN SUPERVISOR
DANIEL R. PATES, DESIGNER
LENNARD JOHNSON, ELECTRICAL ENGINEER

ELECTRICAL CONTRACTOR:
LANGFORD ELECTRIC CORP., MINNEAPOLIS

CURTIS LIGHTING, INC.

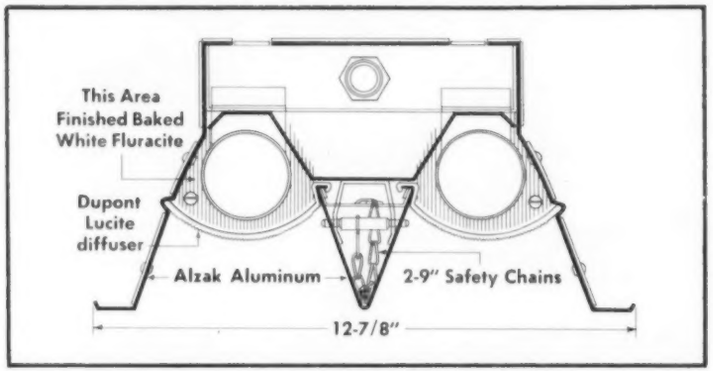
in Chicago
6135 W. 65th ST.
CHICAGO 38, ILL.

in Los Angeles
242 S. ANDERSON ST.
LOS ANGELES 33, CALIF.

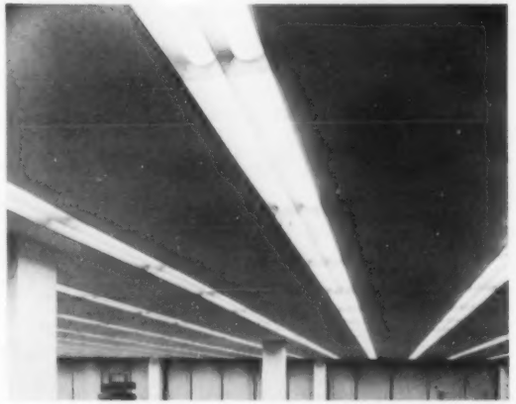
in Canada
195 WICKSTEAD AVE.
TORONTO 17, CANADA

A. I. A. File 31-F2

FIG. 1.



Cross section of special Curtis troffer with shield.



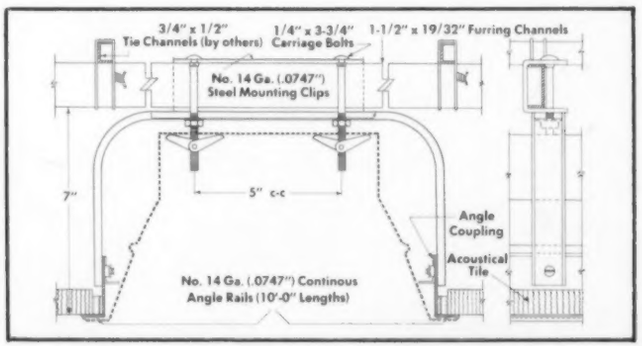
Plastic shield diffuses light and conceals lamps, sockets and holes, etc.

FIG. 2.

FIG. 3.

Structural ceiling construction showing continuous angle rail attached to "U" support strap for support of ceiling and air diffusers.

FIG. 4.



End and side detail showing "U" support strap adaptation.

FIG. 5.

Ceiling system partially installed.

THE SOLUTION:

After studying several different systems, Thorshov & Cerny staff members recommended Curtis Alzak aluminum low-brightness Eye-Comfort troffers as the system that would most efficiently and economically meet their requirements.

Low-brightness troffers were selected because they provide maximum comfort from direct glare. To increase the *total* visual comfort, the architects specified that a diffusing plastic shield be used with the low-brightness lamps so that reflected glare would be reduced to a minimum.

Curtis Designers and Engineers developed this diffusing shield of extruded white Dupont Lucite, and incorporated it under the lamps of a standard troffer.

The shields snap into special grooves made in the outer walls of the troffers, and hinge on a specially constructed "V-bar" member for easy maintenance. Fig. 1 shows a cross-section of the special designed troffer with plastic shields.

Fig. 2 pictures a close-up view of the plastic shields, showing how they provide a completely uniform luminous closure that diffuses the light and enhance the appearance of the luminaire by concealing lamps, sockets and holes, etc.

Troffer rows are spaced on 4' 8" centers, the building module, with each row extending as close to the end walls as possible for maximum wall illumination.

Because the Curtis troffers are the basis for the entire ceiling system, some adaptations to the "U" support strap used to mount the troffers were necessary. Fig. 3 shows how angle members were attached to the "U" support straps to form a continuous rail that supports ceiling tiles and air diffusers. Fig. 4 shows end and side details of this rail and how the "U" support straps are bolted to 1½" carrier channels suspended from the structural ceiling.

Air diffusers are 3' 8" lengths of perforated metal, finished to match the fissured mineral ceiling tiles. Flexible ducts connect the air diffusers to the feed ducts. Fig. 5 shows ceiling system partially installed.

On completion, the large office areas were found to have an average of 75 footcandles after 1,500 operating hours. With average maintenance, 60 footcandles can be expected to be maintained.

In addition, the entire ceiling system accomplishes all of the architect's original objectives because it achieves the maximum accessibility and mobility of *all* elements with minimum effort and expense.

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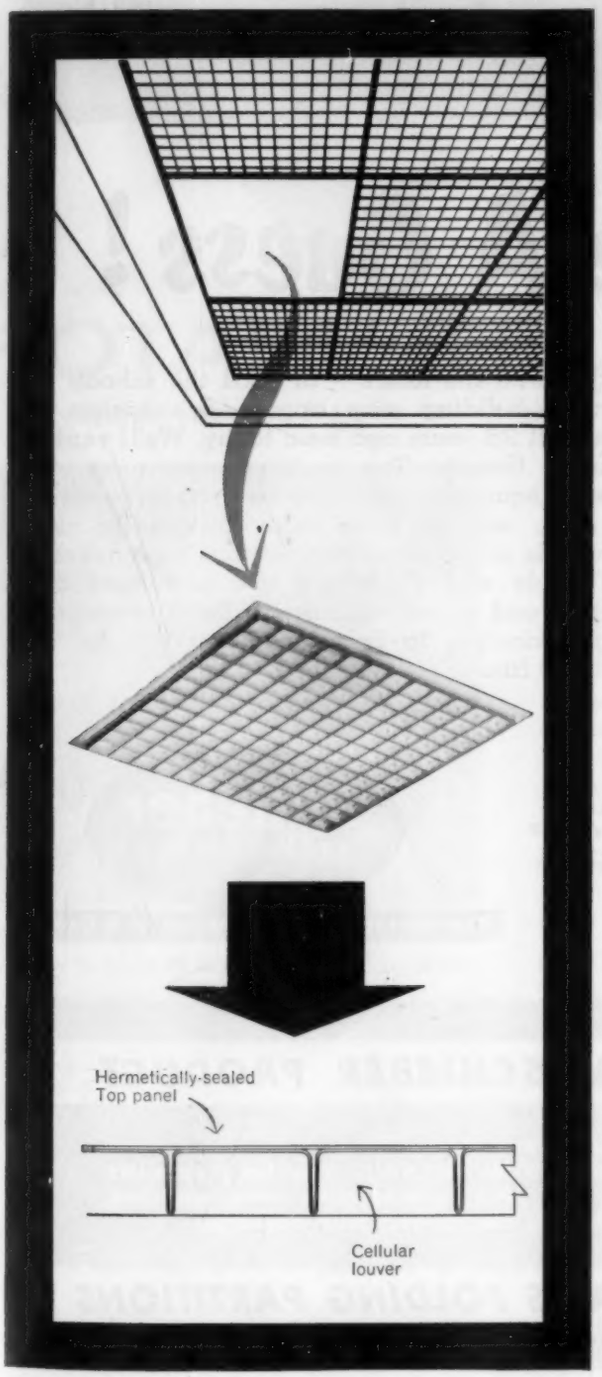

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* Pat. Pend.

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Looking into the future — in 1981 the schools we are now building may appear as obsolete as those built 25 years ago seem today. We'll venture a guess, though; The multi-purpose room, the Schieber equipped combined lunch room — activities area, will be even more universally used. Thousands of Schieber installations have already been made and Schieber's strong, rugged construction and sound engineering have proved the design principle to be practical. Write for our architects file.

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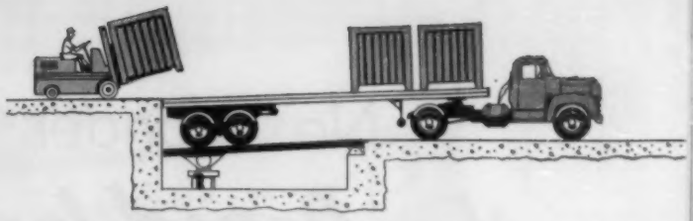

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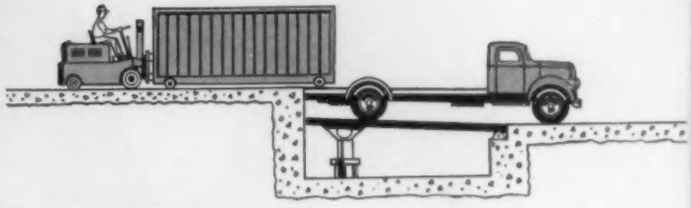

DEMOUNTABLE VANS — *For full truck-load shipments, these vans are loaded in warehouse and rolled onto truck bed when ready to go.*

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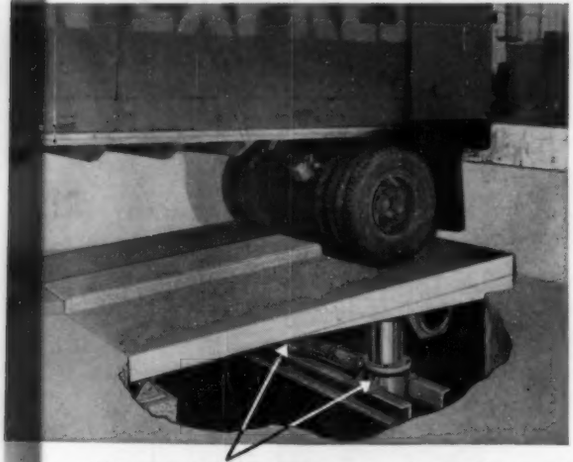
equips docks to handle any highway carrier and any cargo handling method



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The Board has just inspected one of the corridors. Flexachrome vinyl-asbestos tile was used because of its ease of maintenance and exceptional wearing qualities. Flexachrome was also selected for the cafeteria, home-economics room, kitchen and labs, since a greaseproof, acid- and alkali-resistant floor was needed.

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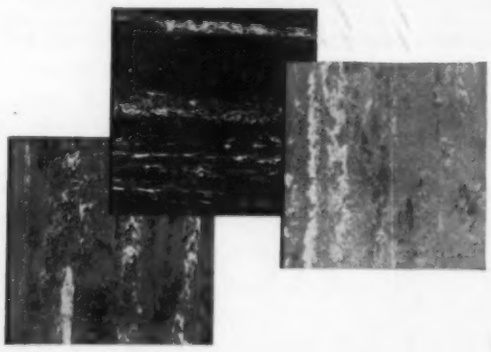
In the 11 Western states: Pioneer Division, The Flintkote Company, P. O. Box 2218, Terminal Annex, Los Angeles, Calif.

In Canada: The Flintkote Company of Canada, Ltd., 30th Street, Long Branch, Toronto.



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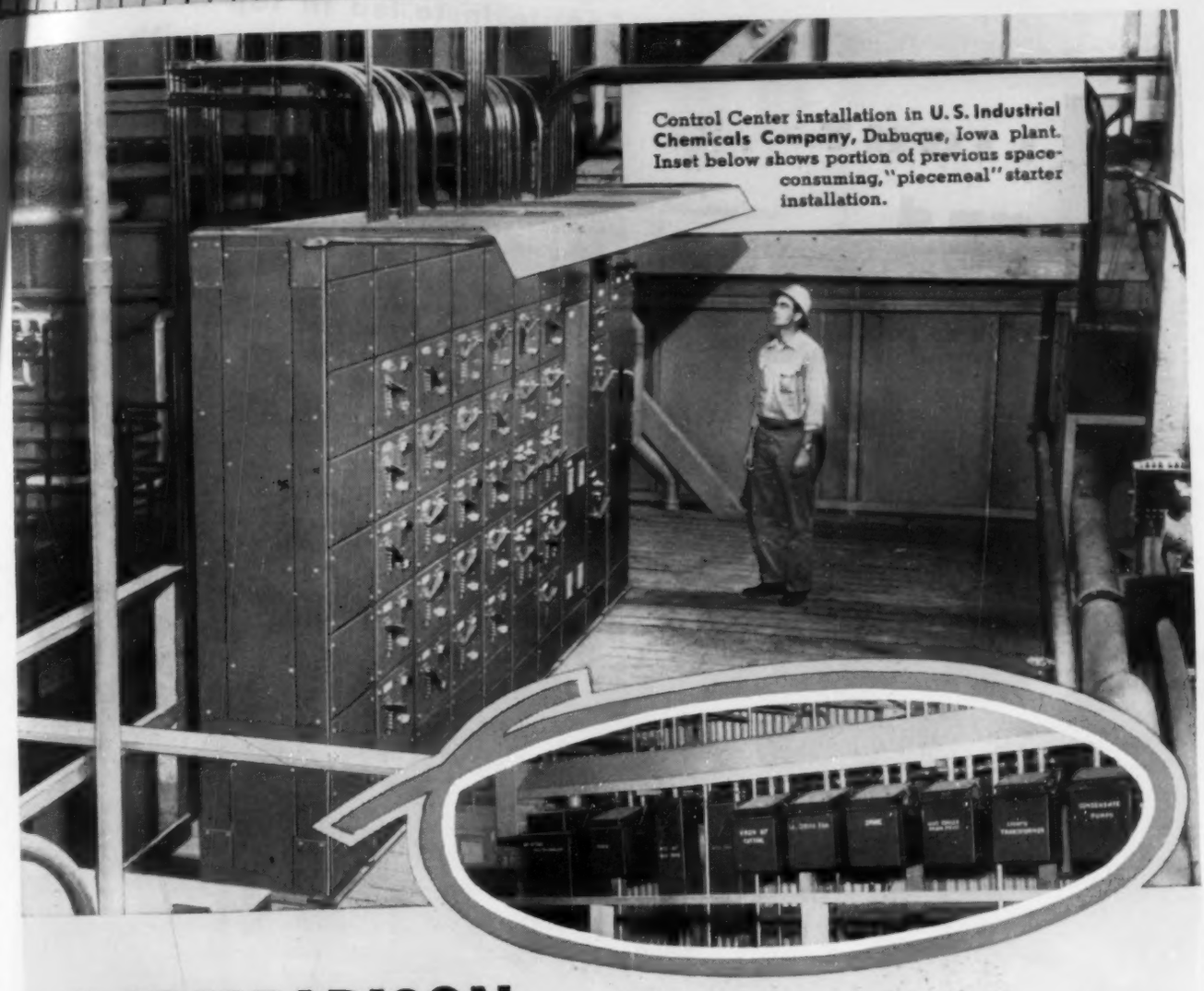

Control Center installation in U. S. Industrial Chemicals Company, Dubuque, Iowa plant. Inset below shows portion of previous space-consuming, "piecemeal" starter installation.

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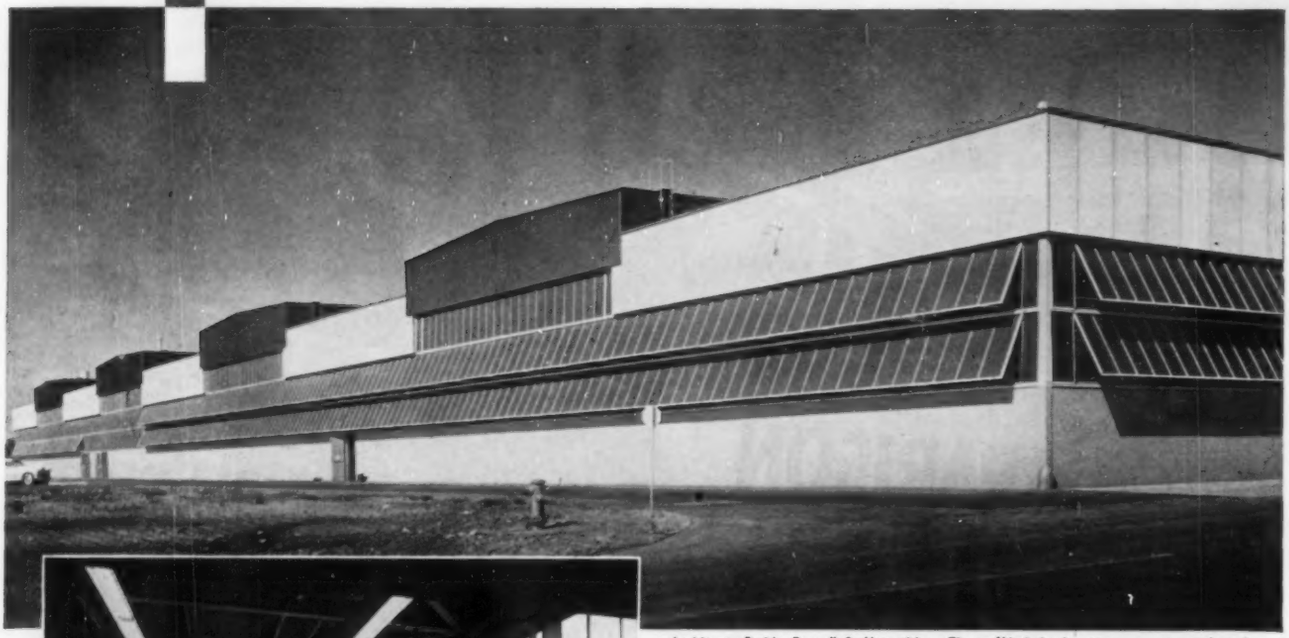

Architects: Smith, Powell & Morgridge. Three Mississippi patterns were employed in this plant: Coolite, Heat Absorbing, Glare Reducing Glass, 19,212 sq. ft.; Smooth Rough, 5,256 square feet; Coolite Wire, Glare Reduced, 5,377 sq. ft.

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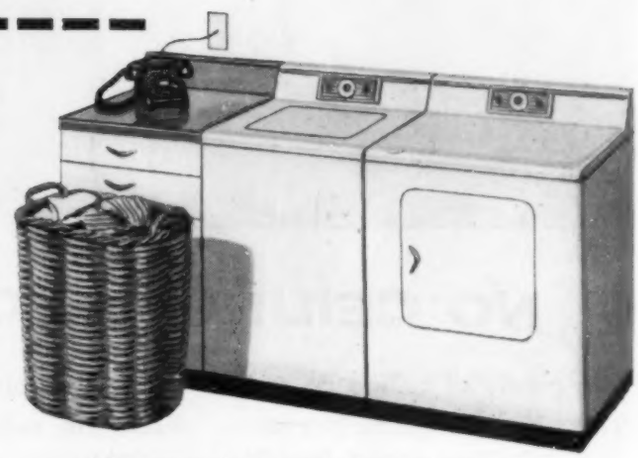

A basement phone is a real convenience, too—saves going up and down steps.

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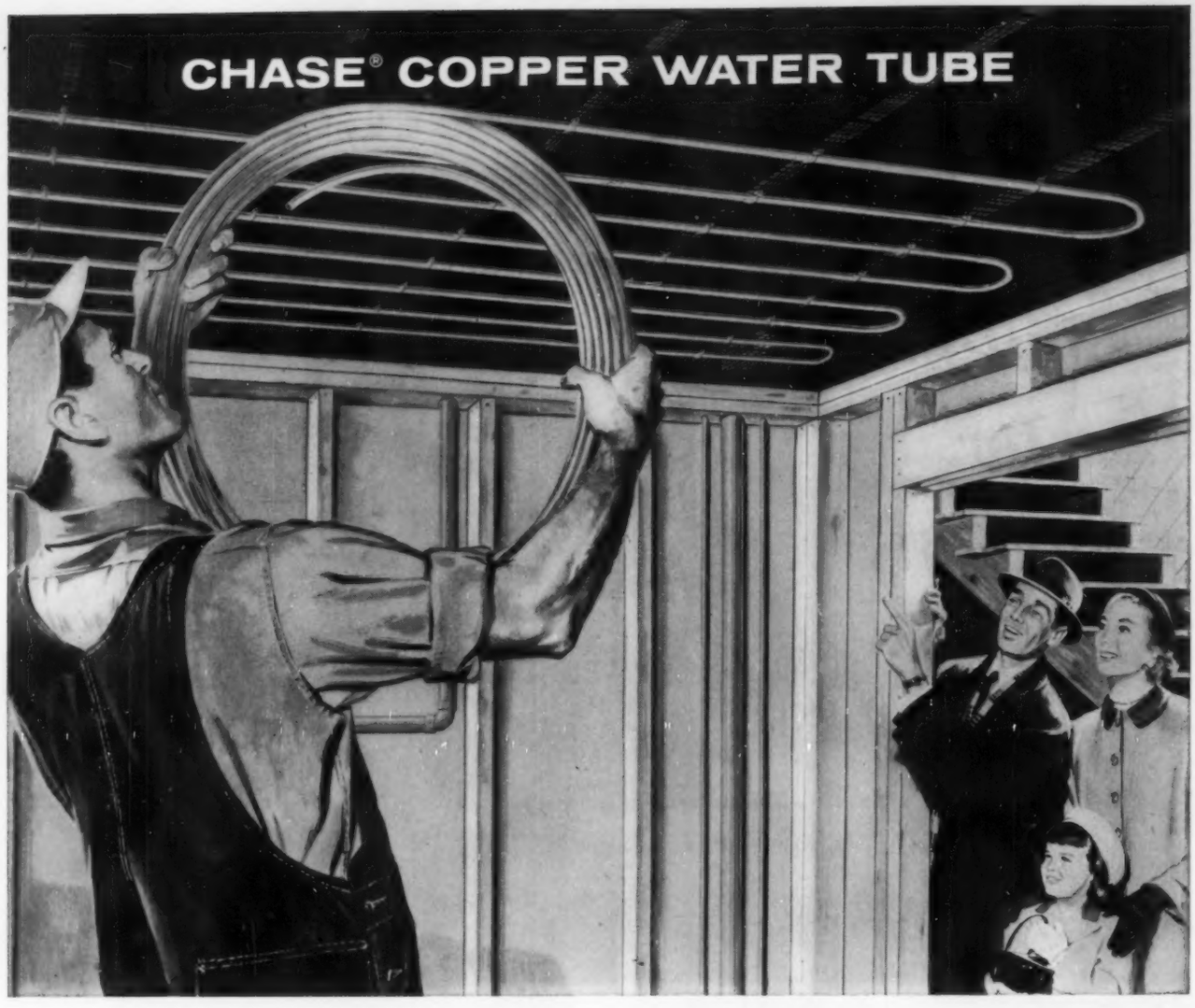

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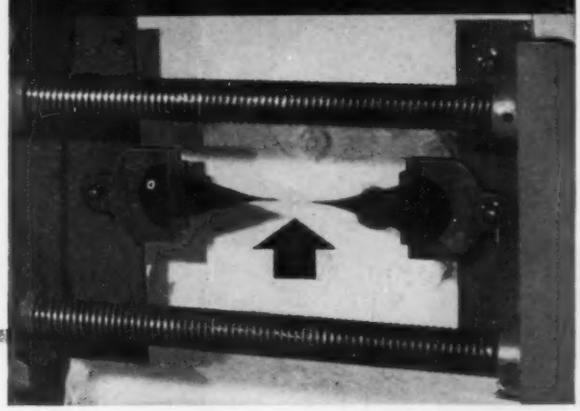

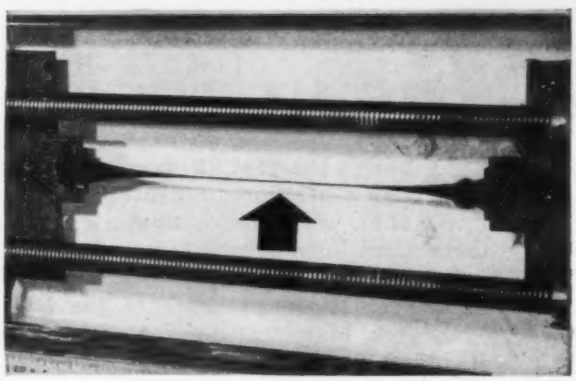

Top: a typical asphalt shown at average breaking point of 12 CM.

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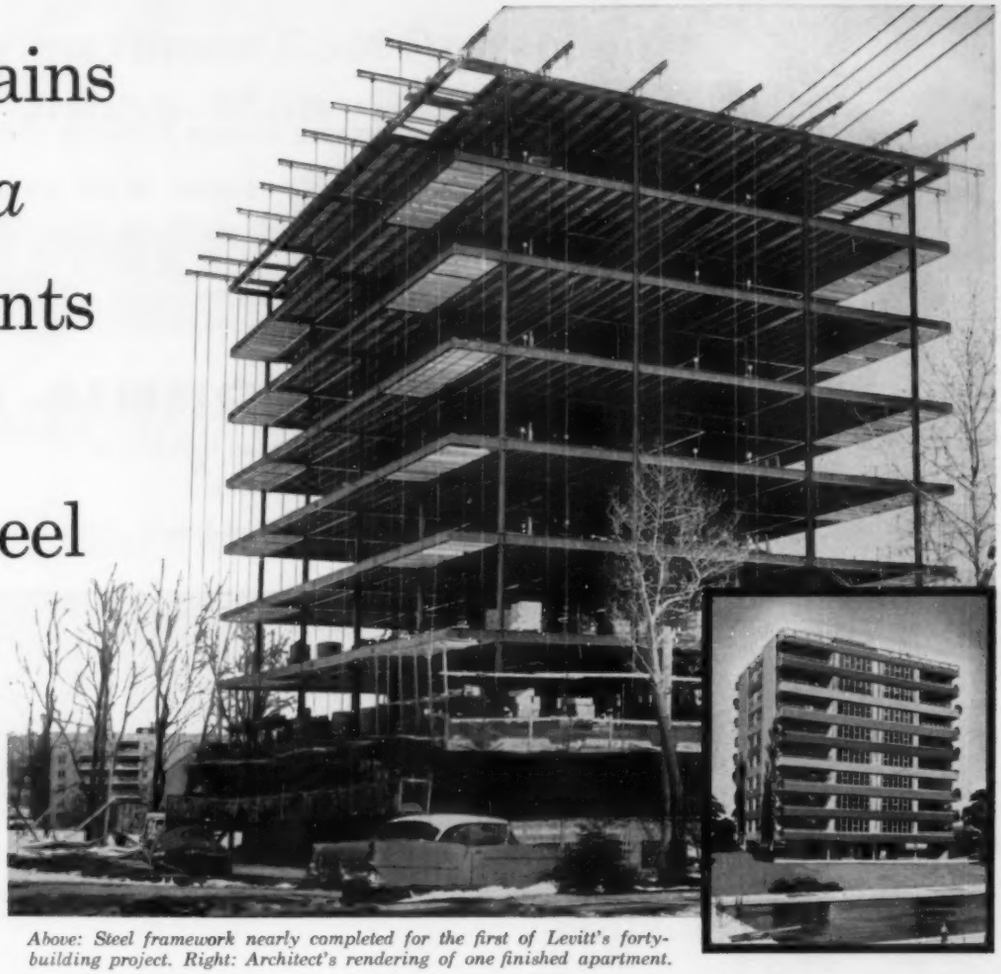
ARCHITECT: GREGORY AIN, A.I.A.

Levitt gains 160 *extra* apartments using Stran-Steel joists



Above: Steel framework nearly completed for the first of Levitt's forty-building project. Right: Architect's rendering of one finished apartment.

Zoning height restrictions in the Borough of Queens, New York, would have limited the luxuriously planned Levitt apartment-community buildings to only seven floors, using ordinary construction. But, by using new Stran-Steel 10-inch nailable joists, 2½" of height was eliminated per floor making it possible for each of the forty buildings to be eight stories high and well within the zoning limitations.

Actually the forty-building Levitt project will gain 160 more apartments since each floor will have four large apartments.

In addition to saving space, Stran-Steel joists make possible other important economies. For example, the Levitt buildings require less steel tonnage because the joists are lightweight but furnish all the strength required. Exterior brick work requires one less course of bricks per floor. And for interior flooring, precast concrete slabs are nailed directly to the joists. This time- and labor-saving feature is made possible by the exclusive nailable design of Stran-Steel joists.

Besides the new 10-inch nailable joist, Stran-Steel provides nailable 6", 8", 9" and 12" sizes. The 10" and 12" sizes are available in lengths up to 30'. For further details of Stran-Steel joists and other architectural products, contact your nearest Stran-Steel Architectural Products dealer or send the convenient coupon.

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Kansas City 16, Mo., 1322 Burlington
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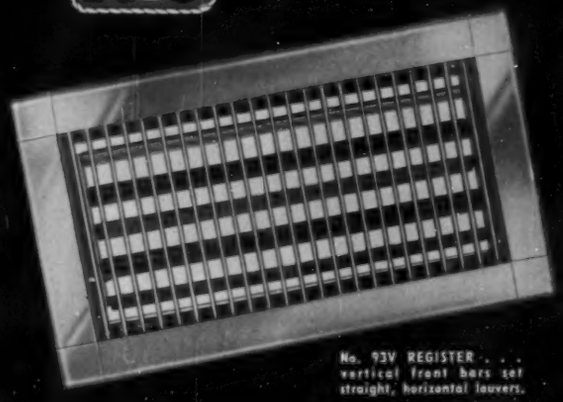
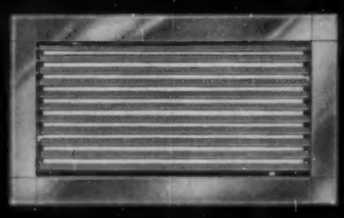
Washington 6, D. C., 1200 18th St., N.W.

H&C FIXT-*AIRE* . . .



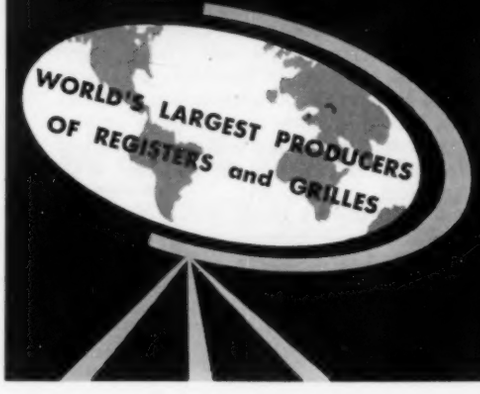
No. 92V REGISTER . . . vertical front bars set straight, horizontal louvers.



No. 94A GRILLE . . . horizontal face bars set at 22° angle for up or down deflection.

. . . return air registers and grilles designed to complement and harmonize with the TRIPL-AIRE line. Registers have a single bank of face bars in fixed vertical or horizontal position, and feature the same opposed louver construction for positive volume control found in TRIPL-AIRE units. Grilles are available with horizontal face bars set at 22° angle for up or down deflection where desired. One-piece sizes up to 36" x 30".

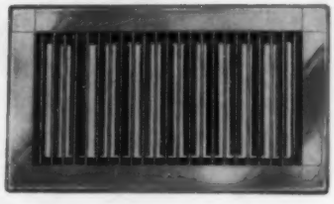
CONVENIENT CATALOG GIVES COMPLETE DETAILS AND ENGINEERING DATA . . .
Available from H&C Jobbers or write direct.



MEMO:
See The New H&C Line
That's Gaining Such
Unusual Acceptance For
Commercial Installations

H&C TRIPL-*AIRE* . . .

No. 92VHV — MULTI-DEFLECTION REGISTER. Vertical face bars, horizontal secondary bars, vertical louvers. Also available without valve No. 92VHO.



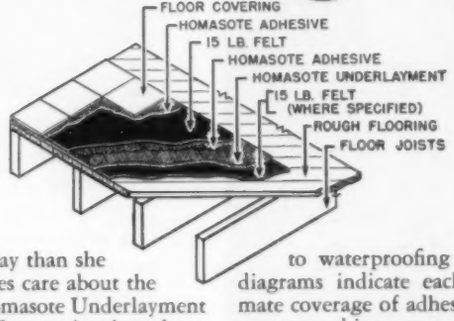
No. 92VOV — SINGLE DEFLECTION REGISTER with vertical face bars and louvers. Also available without valve, No. 92VOO.

. . . is gaining popularity, because wherever these units are installed they "do the job", and do it right. And that's because in this one basic line of 26 standard sizes there are 260 possible horizontal and vertical deflection combinations . . . designed to provide any air flow pattern required. No need to compromise when you use TRIPL-AIRE. The ten TRIPL-AIRE combinations are available in twenty-six standard sizes, up to 36" x 12", as well as in intermediate sizes, up to 36" x 36", to order. Front adjustments control face bars and louvers, and opposed louvers permit absolute volume control with equal air distribution over entire face. Top quality "Decorator Gray" enamel finish. H & C Jobbers have complete details.

HART & COOLEY MANUFACTURING CO.
DEPT. 1-AC, HOLLAND, MICHIGAN

The foundation for fine flooring

—with a special bonus for the housewife



The housewife takes more steps in a day than she would care to know about. But she does care about the comfort of walking on a floor using Homasote Underlayment — she can *feel* the difference. The difference has long been known by hotels; for many years hotel designers have specified Homasote as the ideal foundation for all quality floor coverings except cork — and especially for wall-to-wall carpeting. Homasote Underlayment is still the only major innovation in flooring today.

Actual use of Homasote Underlayment with top quality floor coverings has demonstrated its reliability again and again. The "soft" Homasote floor does not dent appreciably more than any combination of other underlayments and quality floor coverings.

Applied directly over sub-flooring, Homasote Underlayment is installed simply and economically — particularly when you have the **know-how** of the Homasote Handbook. All the needed materials are specified, from ring drive nails to waterproofing formulations for concrete. Accurate diagrams indicate each step of application. The approximate coverage of adhesives is estimated. Special nails to prevent squeaking are recommended. Careful consideration is given to the problem of expansion, and there is a simple explanation of why Homasote Adhesive helps to prevent cracking of the floor surface.

This wealth of detail is just one more example of the **know-how** of the Homasote Handbook — and Underlayment is only one subject so thoroughly handled. The new, revised Handbook has answers to 100 construction problems — all right answers, backed by more than 46 years' experience in the making of quality products. We are proud of this book, and have confidence in its basic value to every architect, builder, and dealer. May we send you a copy, without cost or obligation? Kindly address your inquiry to Department H-7.

HOMASOTE COMPANY
TRENTON 3, NEW JERSEY

YOUR BIGGEST AIR CONDITIONING PROBLEM:

*Rising prices! Cost per cubic foot of air conditioning ducts and building space has tripled since 1930!**

YOUR MOST URGENT AIR CONDITIONING NEED:

An air handling unit which meets all design and functional objectives yet requires only a minimum amount of space!

YOUR BEST AIR CONDITIONING SOLUTION:

New WORTHINGTON central station units that offer unlimited choice of location!

FREE DATA BOOK! Gives you all the facts to figure the job with the most compact, adaptable air handling units ever developed!

Included are photos of units, engineering and design features, specifications, physical data . . . *plus*

Direct Expansion Coil Data • Selecting the Correct Unit with Direct Expansion • Sample Water Cooling and Water Heating Problem • Psychrometric Chart • Heat Control of Dry Air • Log Mean Temperature Chart • Mean Effective Temperature Tables • Correct Fan Selection—Sample Problem and Fan Data • Dimensional Drawings

This fact-filled, easy to use Worthington 52-page Data Book is a "must" for every architect, engineer, contractor and builder! Send for your copy today.

*Architectural Record, May 1956.

WORTHINGTON

CLIMATE ENGINEERS TO INDUSTRY, BUSINESS AND THE HOME

CLIP COUPON AND MAIL!

WORTHINGTON CORPORATION
Box 35
Kearny, N. J.

Please send me free copy of Worthington's new booklet on Central Station Air Conditioning Units.

Name_____
(Please print or type)

Company_____

Street & No. _____

City_____ Zone____ State_____

A. 6. 118

5-Hp. Unit serving three rooms.

Right: Municipal offices cooled with Frick Unit Conditioners

TRADE FRICK MARK®

Air Conditioning—

Packaged Units or Central Systems

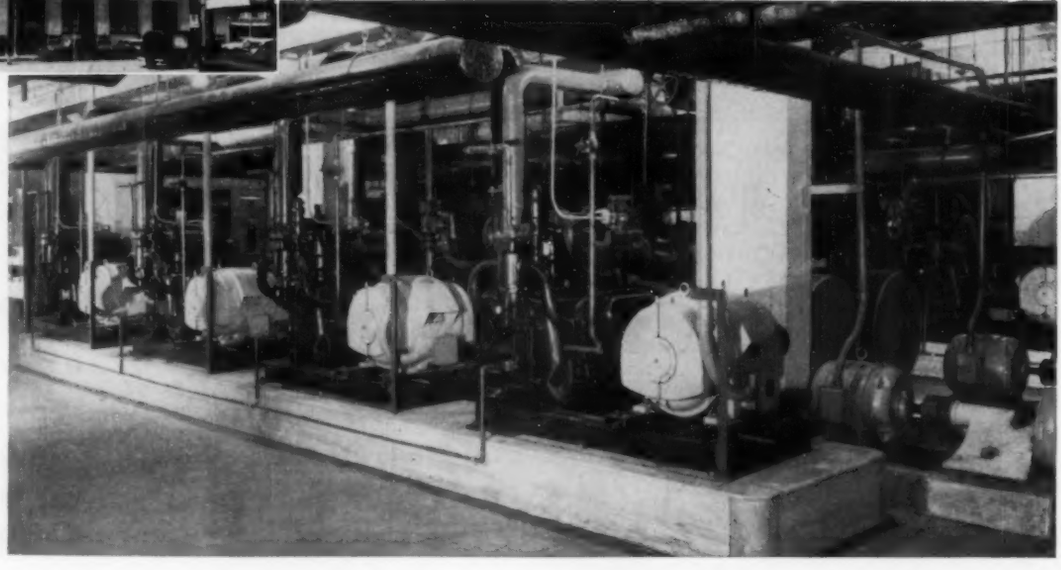
From a 3-hp. unit to a plant requiring thousands of tons of refrigeration is a long step, but they're both included in Frick-engineered air conditioning.

Built into Frick systems are 50 years' experience in air conditioning, nearly 75 in refrigeration, and over 100 in engineering. Nowhere else can you get this unique combination of experience and complete service. Ask for estimates today: write

DEPENDABLE REFRIGERATION SINCE 1882

FRICK CO.

WAYNESBORO, PENNA. U.S.A.



The two 11-story buildings of the American National Insurance Co., at Galveston, are air conditioned by the multiplicity of 75-hp. "ECLIPSE" compressors shown at right. Thousands of fine buildings are Frick-equipped.

The Tile-Tex Division, The Flintkote Company, Chicago Heights, Ill., makes this vinyl floor tile under the trade-mark "Flexachrome." The very nature of the resins used gives flooring colors a brighter, more lustrous sheen. Low maintenance cost is primary among its advantages.

Colors are brighter... colors stay brighter

but that's only one part of the many advantages of flooring made of

BAKELITE
BRAND
Vinyl Resins

BAKELITE COMPANY, *A Division of Union Carbide and Carbon Corporation* UCC 30 East 42nd Street, New York 17, N. Y.

The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC

The thermostat on the wall–

puts comfort at his fingertips

IF HE wants to, the man at the desk can sit there all day and enjoy *complete comfort!*

If he prefers a change in temperature, the adjustment indicator is at eye-level—and within easy reach of his fingertips.

This is *deskside temperature control.* The key to the whole system is the thermostat on the wall—the Honeywell Round.

Thermostatic control is automatic—all year. There's no manual on-off operation with resulting cycle of too-hot, too-cool. No more tiresome, inconvenient adjustments of switches and valves. It provides uniform comfort both winter and summer.

Thermostatic control is sensitive. The thermostat is a precision instrument; it maintains a set temperature accurately.

Thermostatic control is convenient. Unlike switch or valve types of heating control, the thermostat is always conveniently located. Changing a setting is easy and sure.

For complete information and help in selecting thermostatic controls for your clients, call your nearest Honeywell office.

For more details on the Honeywell Round, write Honeywell, Dept. AR-8-121, Minneapolis 8, Minn.

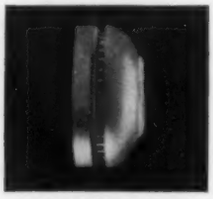
MINNEAPOLIS **Honeywell**

First in Controls

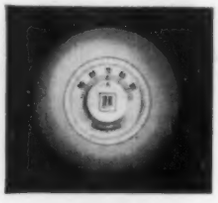
The Honeywell Round

The thermostat that was styled with modern architecture in mind

The popular Honeywell Round is the first truly *new* design in years. Made in pneumatic, electric, and electronic models for accurate, economical control of heating or cooling in hospitals, apartments, offices, schools, industrial buildings, hotels, motels and homes.

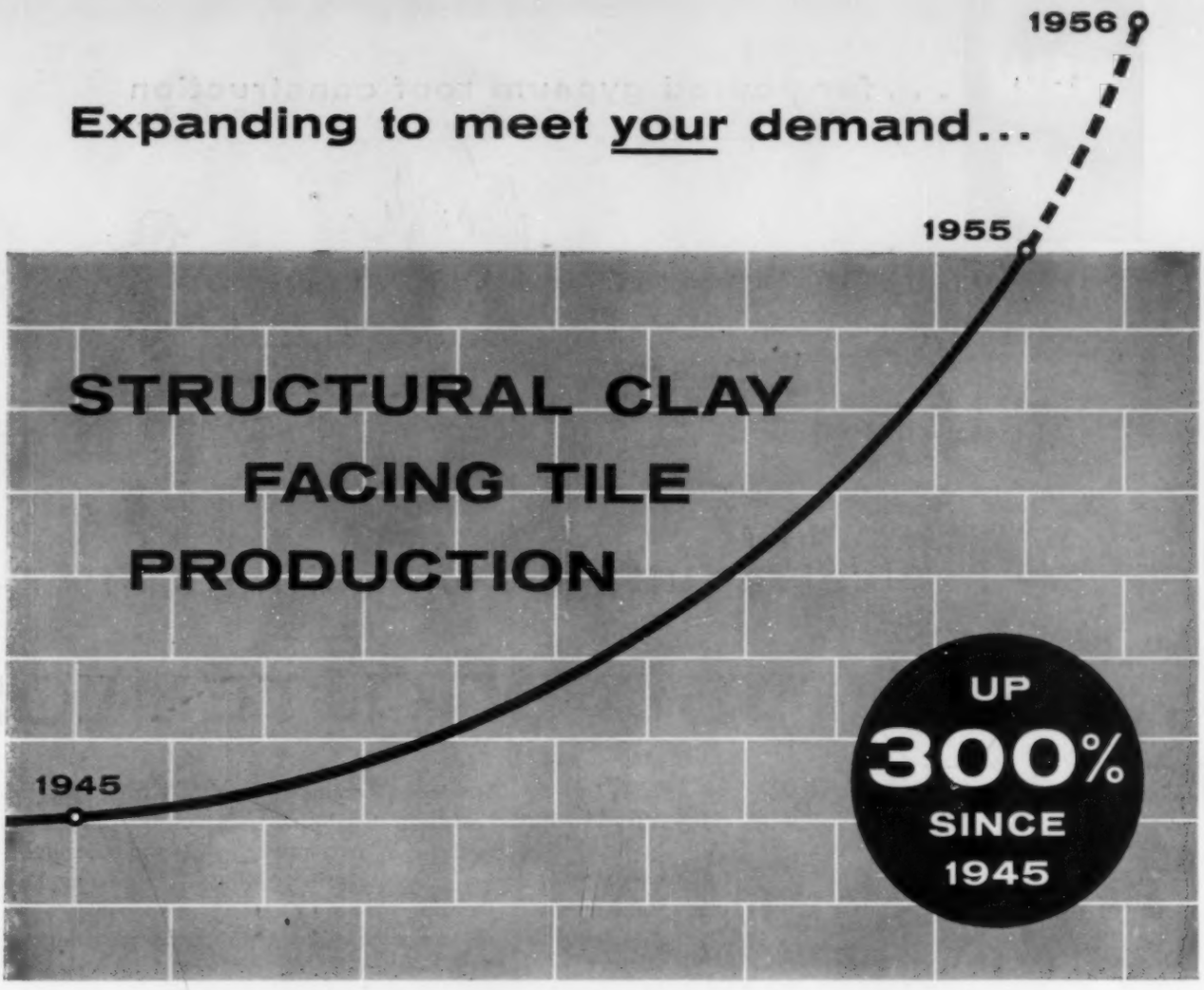


Practical! Ruggedly designed, yet it's precision-built for long service.



Easy to use! Setting and checking are simplified by one easy-to-read scale.

Expanding to meet your demand...



Here's good news for architects, contractors and everyone concerned with building construction.

More Structural Clay Facing Tile will be available in 1956!

In the past ten years, growing architectural demand for this versatile material has sparked a 300% boost in plant capacity. And in 1956 Facing Tile production will expand an estimated 30% more.

Member manufacturers of the Facing Tile Institute have also improved quality while boosting output. With the cooperation of architects and builders, they hope to give the building industry even better products and service in 1956.

FACING TILE INSTITUTE

2556 Clearview Avenue, N. W., Canton 5-5329, Canton 8, Ohio

In the interest of better Facing Tile construction the companies listed here have contributed to the preparation of this advertisement.

CHARLESTON CLAY PRODUCTS CO.
Charleston 22, West Virginia

THE CLAYCRAFT CO.
Columbus 16, Ohio

MAPLETON CLAY PRODUCTS CO.
Canton, Ohio

METROPOLITAN BRICK, INC.
Canton 2, Ohio

McNEES-KITTANNING CO.
Kittanning, Pennsylvania

NATCO CORPORATION
Pittsburgh 22, Pennsylvania

STARK CERAMICS, INC.
Canton 1, Ohio

WEST VIRGINIA BRICK CO.
Charleston 24, West Virginia

NEW . . . for poured gypsum roof construction

exclusive full random ceilings of

Armstrong TEMLOK

With this new Armstrong Temlok Acoustical Formboard you can add a distinctive decorative touch, plus acoustical efficiency, to the exposed "ceiling side" of poured gypsum and other lightweight roof decks. The exclusive ceiling in Armstrong Full Random* was first introduced in Armstrong Cushiontone® Acoustical Ceilings and gained immediate acceptance in institutional, commercial, industrial, and residential construction. Now, its introduction to the formboard field allows you to make beauty a part of lightweight, poured-in-place roof construction. Armstrong Temlok Acoustical Formboard is made in 24″ x 48″ size, 1″ thick.

For full information, write for free folder or call your nearest Armstrong Office. Armstrong Cork Company, 3808 Rock Street, Lancaster, Pennsylvania.

Acoustical efficiency is given Armstrong Formboard by Full Random perforations – drilled holes 3/16″ and 1/4″ in diameter. Noise-Reduction Coefficient of .55 results in efficient noise quieting.

High insulation value is furnished by light density fiberboard composition. 1″ thick Armstrong Temlok Acoustical Formboard has a certified "C" value of 0.36 at 75° mean temperature.

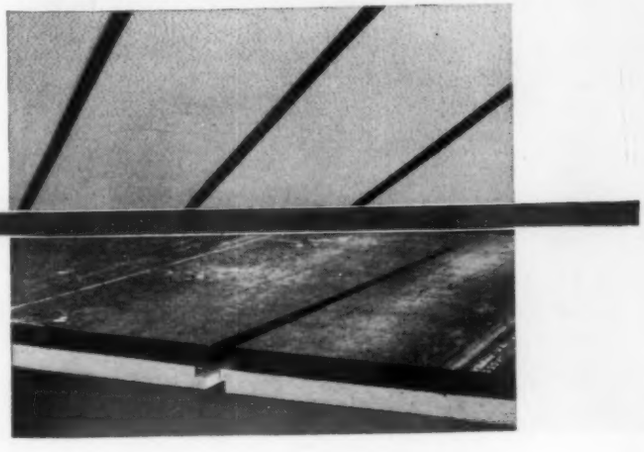
High light reflection of 78% brightens building interiors. Factory-finished white surface is easily maintained, can be repainted if desired without loss of acoustical efficiency.

High strength results from two-layer lamination. Upper 1/2″ is composed of Temlok fiberboard, made extra strong by asphalt impregnation. "Ceiling side" is of plain Temlok, 1/2″ thick.

Vapor permeable insulation board and laminating adhesive allow free escape of moisture for proper slab curing. Adhesive has been specially formulated to retain its strength when wet.

No splines or cross tees are needed with Armstrong Formboard. Extra strong T-and-G joint will adequately support weight of poured-in-place deck. Narrow bevels give ceiling neat look.

K ACOUSTICAL FORMBOARD

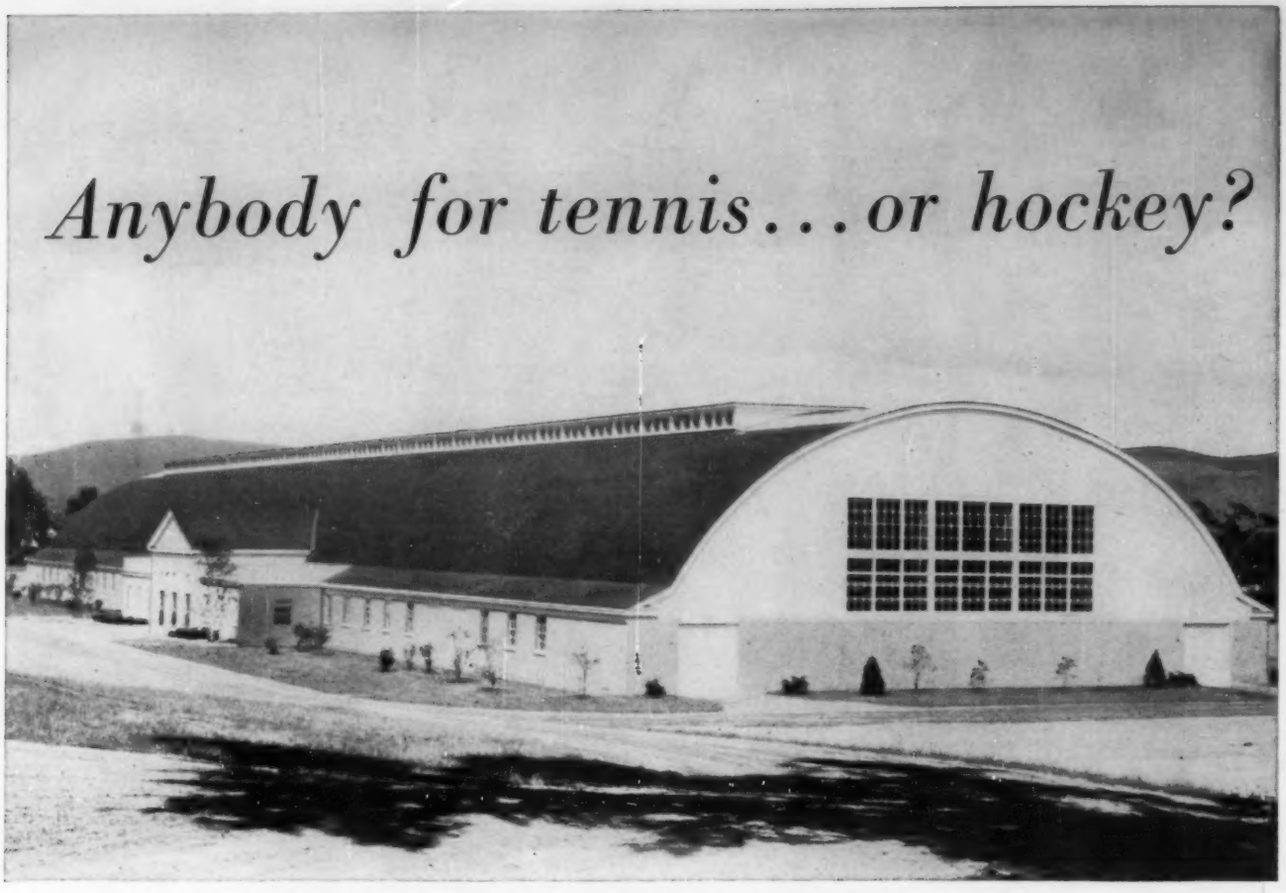


Armstrong

ROOF INSULATIONS

TEMLOK® ASPHALT-IMPREGNATED TEMLOK
ACOUSTICAL FORMBOARD CORKBOARD

Anybody for tennis...or hockey?



Dual rink-court freezes ice fast with 10 miles of steel pipe

What is in summer a court for tennis and other sports and in winter an artificial ice rink -- the first in Vermont -- is the proud acquisition of Middlebury College. In the huge memorial Field House and Gymnasium, about 52,000 ft. of 1-inch steel pipe assures rapid, solid freezing of the 85′ x 185′ rink when the asphalt topping of the sport court is flooded with water.

As at Middlebury, most of the collegiate and professional ice rinks of the country depend on steel pipe to carry the refrigerant . . . additional demonstration that *steel pipe is first choice* for plumbing, radiant heating, fire sprinkler systems, snow melting, structural applications, oil, gas and water lines. In fact, steel pipe is the most widely used pipe in the world!

Several interesting booklets are available for the asking . . . "*Steel Pipe in American Life*," "*Radiant Panel Heating with Steel Pipe*" "*Steel Pipe Snow and Ice Removal Systems.*"

Committee on
STEEL PIPE RESEARCH
AMERICAN IRON AND STEEL INSTITUTE
150 East Forty-Second Street, New York 17, N. Y.

Steel Pipe is First Choice

Marvibond* vinyl to metal

for new **BEAUTY**, new **STRENGTH**, new **PERMANENCE**!

Now you can enjoy all of the advantages of metal—*without the disadvantages of rust and corrosion*—with colorful surface effects that are practically unlimited!

Marvibond—Naugatuck Chemical's recently developed vinyl-to-metal laminating process—bonds tough Marvinol® vinyl sheeting to practically any kind of sheet metal, *permanently,* to give you all these "extras"...

- **permanent protection against rust and corrosion!** One of the most inert of all known materials, vinyl resists acids, alkalies, salt water, alcohol, household chemicals, corrosive industrial liquids and atmospheres.
- **lastingly beautiful surface effects!** Vinyl can be given practically any color, in many finishes, including leather-like grains, marble patterns, prints, weave-like designs.
- **superior abrasion resistance!** Marvinol vinyl finish resists abrasion far better than paints, lacquers, varnishes, phenolic or alkyd finishes, will not chip, crack, or craze.
- **greater utility!** Marvibonded metal eliminates many costly finishing operations—can be drawn, crimped, sheared, embossed, and otherwise formed *without damage to coating or bond.*

Investigate the unique advantages this new material combination offers *you*—in furniture, cabinets, wainscotting, tile-like walls, partitions, applications by the *building-full.*

* * *

Write us for further data, samples, or the names of the licensed MARVIBOND laminators nearest you.

*Patent applied for

US RUBBER

United States Rubber

Naugatuck Chemical Division

Naugatuck, Connecticut

BRANCHES: Akron • Boston • Gastonia, N.C. • Chicago • Los Angeles • Memphis • New York • Philadelphia • IN CANADA: Naugatuck Chemicals, Elmira, Ontario
Rubber Chemicals • Synthetic Rubber • Plastics • Agricultural Chemicals • Reclaimed Rubber • Latices • Cable Address: Rubexport, N. Y.

Design it better with **PITTSBURGH GLASS**

New Penn Center in Philadelphia makes dramatic use of

Pittsburgh Glass

Towering over Philadelphia's business center is this clean-lined, rectangular, twenty-story building—the first in that city's new Penn Center project. Its facia features broad horizontal ribbons of Pittsburgh Glass with limestone spandrels. The ground story utilizes Pittsburgh Polished Plate Glass in its floor-to-ceiling glass "walls." The upper floors are glazed with Pennvernon® Heavy Sheet Glass. In addition, all entrances to this impressive structure are equipped with Pittsburgh's Herculite® Tempered Plate Glass doors and the enclosed vestibules are glazed with Pittsburgh Polished Plate Glass. Uris Brothers, Owners and Builders; Architects: Emery Roth & Sons, New York City.

THIS VIEW of one of the entrances to the new Penn Center office building shows how Pittsburgh's Herculite Tempered Plate Glass Doors combine to give this modern structure its high design appeal.

HERE, the director's room of Pennsalt—one of the prominent tenants occupying space in the Penn Center building—is separated from the adjacent hall by Pittsburgh Polished Plate Glass dividers.

Your Sweet's Architectural File contains detailed information on all Pittsburgh Plate Glass Company products . . . Sections 7a, 13e, 16a, 16d, 21.

PPG

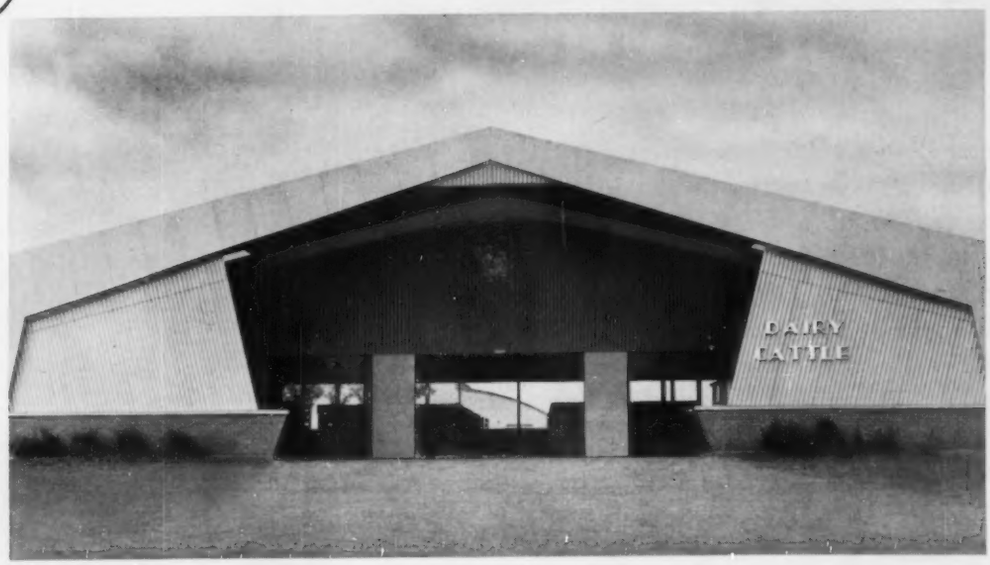
PAINTS · GLASS · CHEMICALS · BRUSHES · PLASTICS · FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

ONE OF A SERIES OF IDEAS FOR YOUR FILES

ANOTHER NEW IDEA...



WITH CORRUGATED ASBESTONE

Contractor: Standard Roofing & Material Co., Oklahoma City, Oklahoma.

State Fair Sidewalls of Gold Bond Stay Strikingly Attractive Season After Season

The Dairy Cattle Exhibition Building at the State Fair of Oklahoma is fitting shelter for the Southwest's finest cattle—and also show dairymen what modern design can do for farm buildings. Roof and facade of this building are made of rock-like Gold Bond Corrugated ASBESTONE "400", the versatile building material that needs no maintenance, permanently resists fire, weather, corrosion and helps to keep cool, comfortable temperatures even on the hottest days.

Builders and designers who know the advantages of ASBESTONE are attracted by this unusual use of natural shadow lines which complement the bold lines of the modern truss roof. State Fair officials are so pleased with the quality, practicability and attractiveness of Gold Bond Corrugated ASBESTONE that they are planning to use it on six additional buildings.

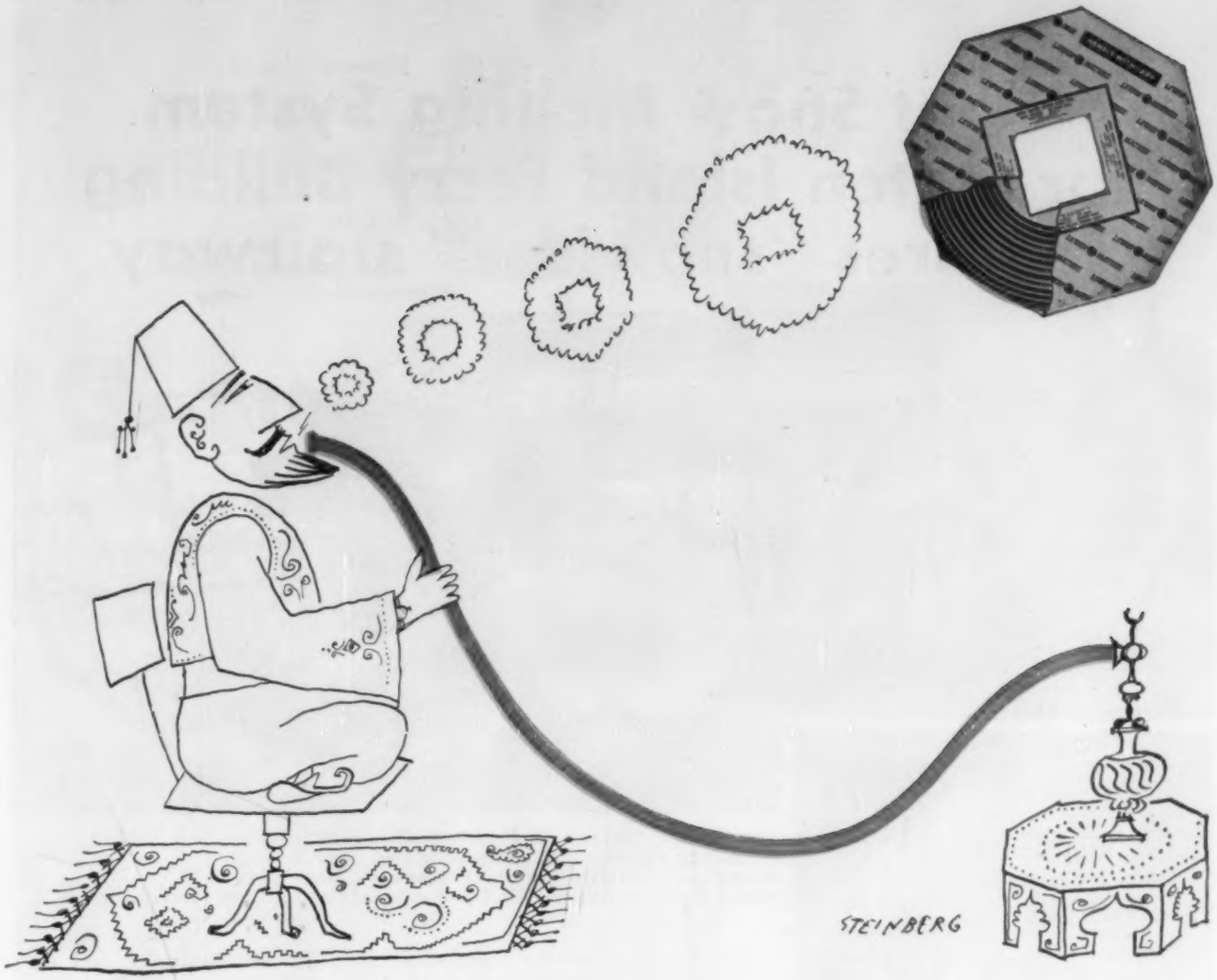
How many uses can *you* think of for Gold Bond Corrugated ASBESTONE? Wherever you use it, you're getting permanent protection and good looks. For more details, write Dept. AR-86, National Gypsum Company, P.O. Box 5257-B, New Orleans 15, La.

Gold Bond Technical Bulletin No. 2032 and Booklet No. 2273 give full specifications and uses of Gold Bond CORRUGATED ASBESTONE Products.

CORRUGATED ASBESTONE

NATIONAL GYPSUM COMPANY

Gold Bond®
BUILDING PRODUCTS



pipe dream

No puffery is intended, but . . .

Twenty-five years ago we set out to make Lewin-Mathes Copper Tube and Pipe distinctive through superior quality and service.

In uniformity of product . . . Lewin-Mathes has achieved a standard of continuous quality control—from raw material to finished product—possible only in a *completely integrated* plant such as ours at Monsanto, Ill.

In packaging . . . the HANDIGRIP Carton, developed by Lewin-Mathes, pointed the way to similar containers for coiled tube now in general use.

And in distribution . . . our nationwide network of Service Offices and Mill Depots has earned for Lewin-Mathes a reputation for service and efficiency second to none.

What's *your* "pipe dream"? A new building? Improving your home? Producing a better product? If it calls for tube or pipe, be sure your architect, engineer or designer calls on Lewin-Mathes—the *integrated specialists!*

LEWIN MATHES

SAINT LOUIS, MISSOURI

MANUFACTURERS OF
COPPER AND BRASS TUBE PIPE AND ROD

Giant Snow Melting System for Staten Island Ferry Building features "*snowless*" stairway

Architectural Designers & Engineers: Roberts & Schaefer, New York, N. Y.
Consulting Engineer: Mongitore & Moesel, New York, N. Y.
Mechanical Contractor: Raisler Corporation, New York, N. Y.
Pipe Fabricator: Atlantic Pipebending & Fabricating Corp., Wood-ridge, N. J.

Snow melting coils in place on stairway forms . . . and freshly concreted stairway. Handrails to be installed later.

Reconstruction of the Manhattan Terminal of the Staten Island Ferry, operated by New York City's Dept. of Marine and Aviation, includes an extensive snow melting system. The long curving ramp, which starts at street level and expands into a semi-circular walkway on the second level, is completely fitted with snow-melting coils, as are the walkways.

A unique feature of the installation is that an open stairway from the street to the top of the ramp has also been equipped with snow-melting coils—one length of 1" pipe in the tread of each step.

Approximately 14 tons of 1" NATIONAL Steel Pipe were used in the grids, and about 5 tons of sizes up to 3" were employed as headers, connecting pipes, etc.

Architects, engineers, and contractors have been specifying USS NATIONAL Steel Pipe for over 60 years as the "standard" choice for conventional plumbing and heating systems.

The inherent characteristics of NATIONAL Pipe are well known—smooth, uniform bending; sound, strong welding properties, and extra-long service life—characteristics that make NATIONAL Pipe ideal for such applications as snow melting and radiant heating, and give it the reputation for dependability that it enjoys. Such a well-deserved reputation inspires confidence—a nation-wide confidence that has made USS NATIONAL Pipe the largest selling pipe in the world. Write for free descriptive literature.

NATIONAL TUBE DIVISION, UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS **NATIONAL PIPE**

UNITED STATES STEEL

the newest outstanding Grant product development

the Grant folding door

A REAL DOOR THAT FOLDS!

styled by Paul McCobb

features

Solid Panels: The solid panel construction of this Grant door is a revolutionary development in a folding door at moderate price. The *Grant Folding Door* has crisp, clean lines, blocks sound, hangs rigid without billows or rustle. Knock on it. It sounds and feels like a door.

Space Saving: Frees an average of 14 square feet of floor space (19 square feet of wall space) for living space, better arrangement of furnishings.

Durable—Easy to Maintain: Vinyl surface can be wiped with a damp cloth—scrubbed if necessary. Tough and long-wearing, resists scuffing, color is permanent.

Easy Installation: Only a screwdriver is needed to install the *Grant Folding Door* in standard door openings in minutes. Readily adaptable to non-standard openings.

Decorative Flexibility: Color styled to harmonize with modern or traditional furnishings. Attractive design of handles, track and other details, also specially styled by famous Paul McCobb.

▶ Ask for your copy of fully descriptive specifications booklet, the swatch book showing the attractive colors available and texture of the non-scuffing vinyl finish.

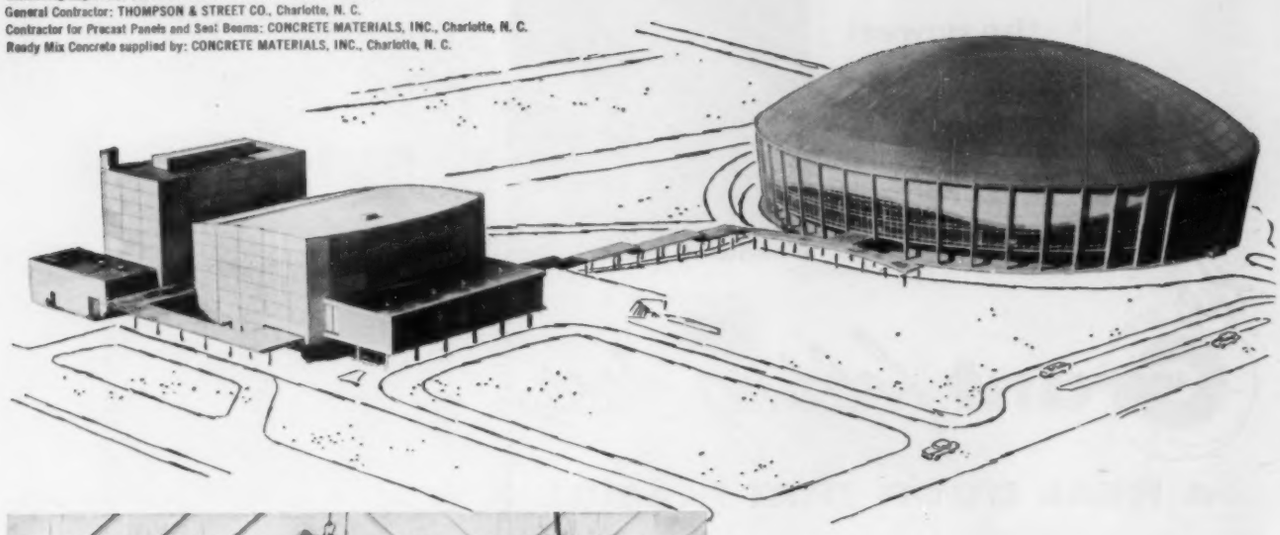
the Grant folding door

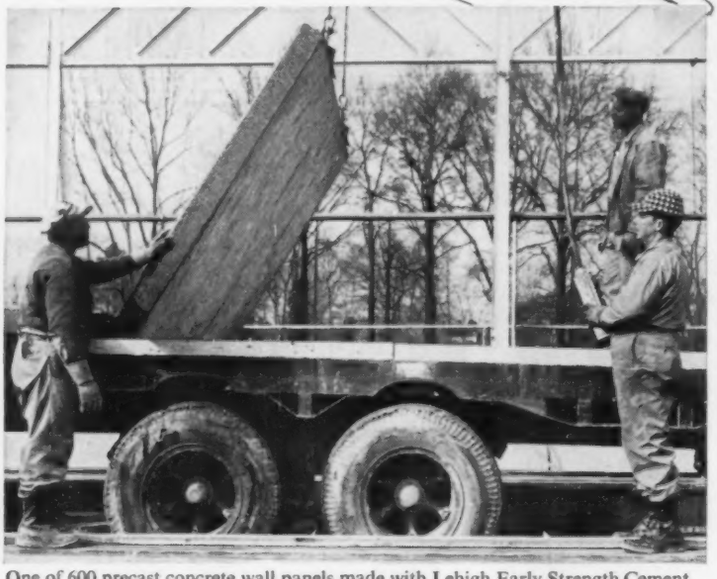
"A REAL DOOR THAT FOLDS"

Grant Pulley and Hardware Corporation
31-71 Whitestone Pkwy., Flushing 54, N.Y.
944 Long Beach Avenue, Los Angeles 31, Calif.

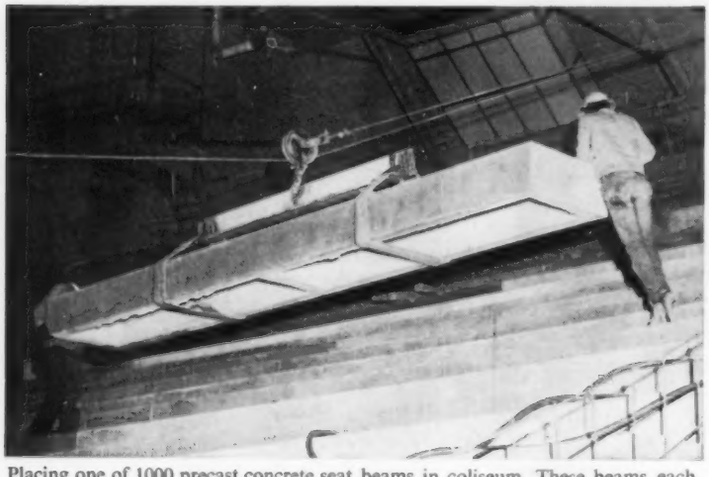
Other Grant Products:
Sliding Door Hardware • Drawer Slides
Drapery Hardware • Sliding Door Pocket Frames
Sheaves and Tracks • Pulls • Industrial Slides

Architect: A. G. ODELL & ASSOCIATES, Charlotte, N. C.
Consulting Engineers: SEVERUD-ELSTAD-KRUEGER, New York City
General Contractor: THOMPSON & STREET CO., Charlotte, N. C.
Contractor for Precast Panels and Seat Beams: CONCRETE MATERIALS, INC., Charlotte, N. C.
Ready Mix Concrete supplied by: CONCRETE MATERIALS, INC., Charlotte, N. C.





One of 600 precast concrete wall panels made with Lehigh Early Strength Cement. Averaging 7½' x 20' in size, the panels form 60,000 square feet of the exterior walls in these structures.



Placing one of 1000 precast concrete seat beams in coliseum. These beams, each weighing 4000 lbs. were also made with Lehigh Early Strength Cement. Seating capacity of coliseum is 10,000.

trend toward **tomorrow...**

The David Ovens Auditorium and the Charlotte Coliseum, Charlotte, N. C. illustrate the trend toward concrete for tomorrow's construction. By combining precast and cast-in-place concrete the designers and contractors have provided structures that are durable, functional and pleasing to the eye.

Lehigh Cements were used throughout. In the manufacture of the 600 precast exterior wall panels and 1000 precast seat beams, Lehigh Early Strength Cement was used to cut labor, curing and overhead costs by 50%. Dependable Lehigh Portland Cement was used in the ready mix concrete for all cast-in-place concrete. Lehigh Mortar Cement was used to lay up all masonry units.

Whether the structures you design are big or small, traditional or modern, there are Lehigh Cements to meet your requirements. You can approve Lehigh Cements with the assurance that they surpass the most exacting Federal and ASTM specifications.

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LEHIGH PORTLAND CEMENT COMPANY

ALLENTOWN, PA.

GIVE HER THE WARDROBE SPACE SHE WANTS

WITH

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Sliding Doors

GLIDE-ALL doors installed in Parkwood Vista, La Mirada, Calif.
Builder: *Devon Construction Co., Los Angeles*
Architect: *Herman Charles Light, A. I. A.*

■ In designing and building homes *to sell* you certainly try to meet the customer's demands—to give them major features they want. The most house for the money is the important thing. More easy-to-use wardrobe and storage space has a most important "buy appeal" today, and the simple, low-cost way to give "Mrs. Home Buyer" the space she wants is with GLIDE-ALL Sliding Doors.

GLIDE-ALL Doors make floor-to-ceiling, wall-to-wall expansive wardrobes, huge closets in corners of small rooms, full-length, full-height hallway storage space, entrance-way guest closets, and in many other waste-space areas. GLIDE-ALL Doors save construction time and dollars too . . . they're installed quickly, adjusted easily to fit the opening, decorate with the wall, and give a life-time of trouble-free performance. They are available in standard 8′ and 6′8″ heights, flush or recessed panel models, overhead or bottom roller types . . . and in special sizes for unusual jobs. *Write for complete details, specifications and prices.*

GLIDE-ALL Doors are available from distributors throughout the United States and Canada. For information write Plant nearest you.

GLIDE-ALL DOORS ARE A PRODUCT OF

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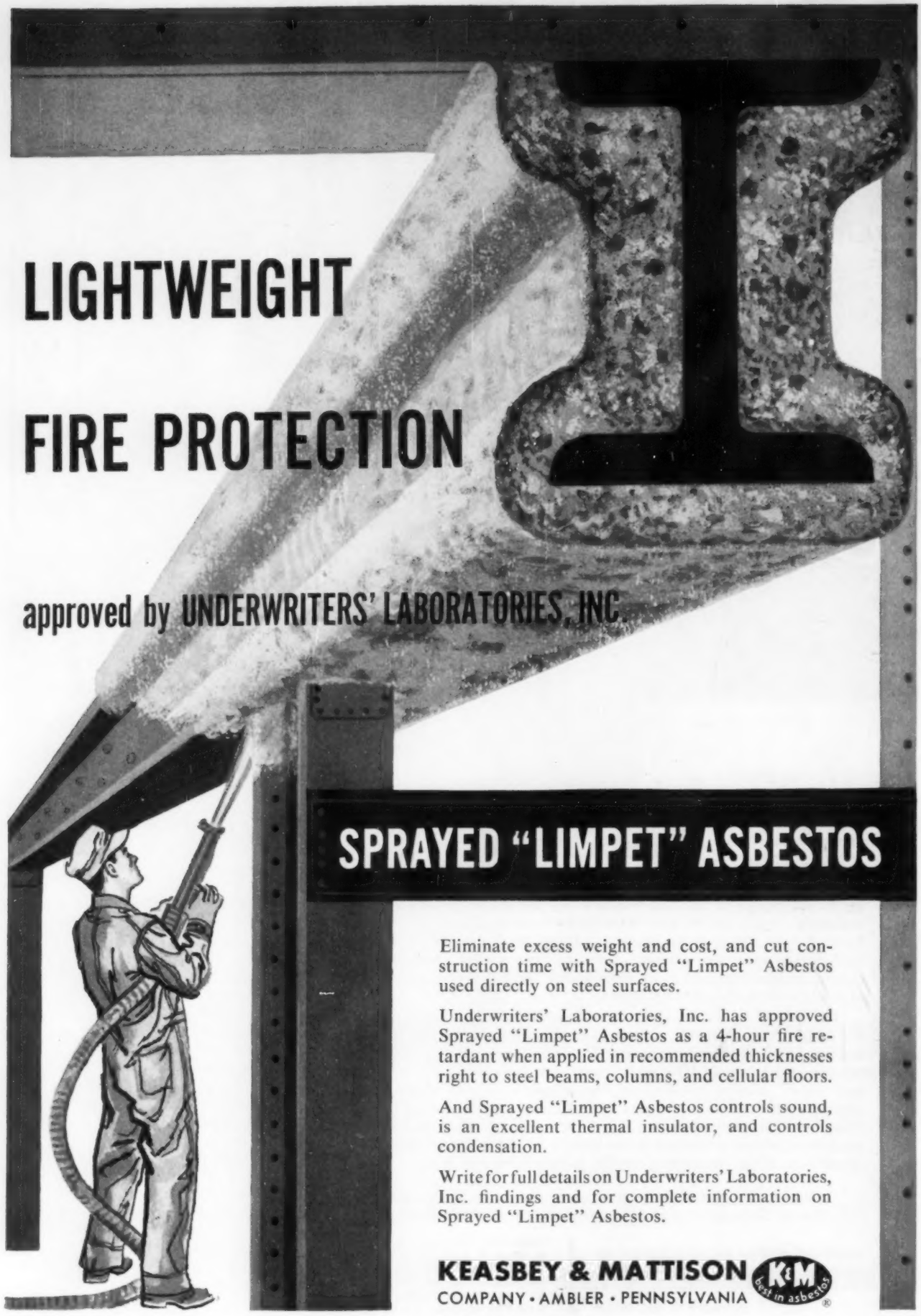
WHAT'S BEHIND GLIDE-ALL DOORS

GLIDE-ALL Doors are the result of extensive research by Woodall design and production engineers to provide modern, versatile "package" sliding doors at low cost to the Building Industry. They are unique in their design, Woodall-Quality built and guaranteed. Six modern Woodall plants, coast-to-coast, produce GLIDE-ALL Doors and distribute them through a broad national network of sales and service organizations backed by the reputation of Woodall Industries, Inc.

LIGHTWEIGHT FIRE PROTECTION

approved by UNDERWRITERS' LABORATORIES, INC.



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Eliminate excess weight and cost, and cut construction time with Sprayed "Limpet" Asbestos used directly on steel surfaces.

Underwriters' Laboratories, Inc. has approved Sprayed "Limpet" Asbestos as a 4-hour fire retardant when applied in recommended thicknesses right to steel beams, columns, and cellular floors.

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Write for full details on Underwriters' Laboratories, Inc. findings and for complete information on Sprayed "Limpet" Asbestos.

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Gregsen Associates
—Architects
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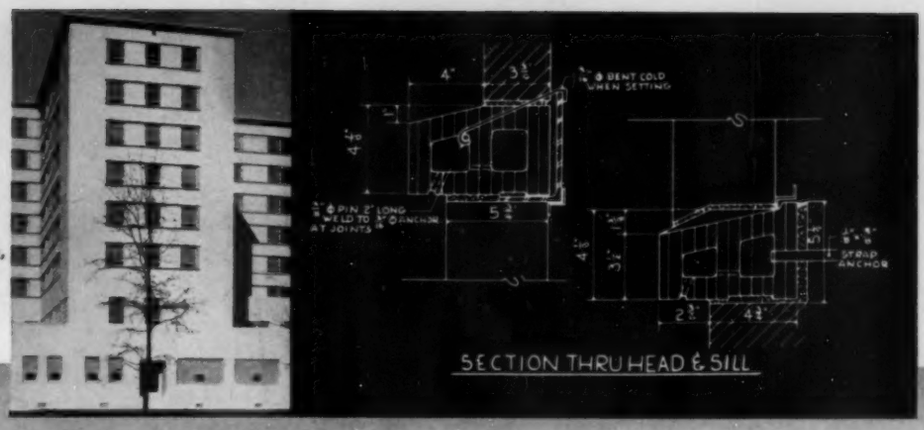
—General Contractors
John B. Kelly, Inc. of Pennsylvania
—Masonry Contractors

Throughout this modern hospital, sills, jambs and lintels of Architectural Terra Cotta, in a mottled effect combining blue and green, provide added character through the use of color.



Colorful sills, jambs and lintels complement this hospital facing

Architectural Terra Cotta combines so readily and impressively with other materials that it gives you utmost design freedom. The range of available colors and textures rivals the imagination. In form, you have plain surfaces, sculpture or decorative panels from which to choose. Units can be large or small, for interiors or exteriors. Such is the versatility of Architectural Terra Cotta, custom-made to your specifications by Federal Seaboard. No other building material offers so much—in quality, color, appearance, permanence and price. Moreover, its original richness and beauty are retained indefinitely by simple soap-and-water washings.

Construction detail, data, color samples, estimates, advice on preliminary sketches, will be furnished promptly without charge on Architectural Terra Cotta and Ceramic Veneer.

FEDERAL SEABOARD TERRA COTTA CORPORATION

F S T C

10 East 40th Street, New York 16, N. Y.
PLANT AT PERTH AMBOY, NEW JERSEY

STEEL JOIST CONSTRUCTION HELPS PROTECT NEW ST. PAUL STORE FROM FIRE HAZARD

This handsome new W. T. Grant store in downtown St. Paul measures 100 ft by 236 ft, with three sales floors – basement, first and second – and office and storage space on the third. The exterior is faced with glazed brick panels and marble trim, with polished granite used from awning height to sidewalk. One interesting phase of the store's construction was the need to go down 55 ft through old Mississippi River bottom to rest foundations on bedrock.

All three floors and the roof of the new store were built with Bethlehem Open-Web Steel Joists. In combination with poured floor slabs and plaster ceilings, steel joists give a fire-resistance of up to four hours, depending upon the thickness of the slab and the type of plaster used.

In addition, steel joists provide a non-warping, non-sagging construction, helping to hold down building maintenance to a minimum. They help reduce construction time, too, for they arrive at the job site fully fabricated, ready for instant placing. And the installation of lighting fixtures, piping and ductwork is simplified, for pipes and wires are run right through the open webs.

The new W. T. Grant store in St. Paul was designed by Thorshov & Cerny, Inc., architects and engineers, of Minneapolis. *General Contractor:* Standard Construction Co., of Minneapolis; *Steel Fabricator:* St. Paul Structural Steel Co., of St. Paul.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
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BETHLEHEM OPEN-WEB STEEL JOISTS

BETHLEHEM STEEL

HAKO Coraline VM-89 and St. Michel Grey VM-85 Vinylflex Floor Tile

Inexpensive Luxury!

HAKO FLOOR TILE

The ability of HAKO Vinylflex to stay beautiful is the result of many factors . . . color, surface and resistance to everyday wear . . . plus built-in protection against greases, oils, mild acids, alkalies, gasoline and naphtha. All are important properties of this HAKO all-purpose vinyl asbestos floor tile. HAKO Vinyflex is famous for flexibility, resilience and unlimited application possibilities in homes, commercial establishments, institutions and industry ... with exceptional results in performance and economy. Vinylflex Floor Tile carries the HAKO workmanship and quality material warranty.

Write for details about modern HAKO Floor Tile, Box 986, Newburgh, New York.

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New hospital or existing hotel...

QUIET AIR CONDITIONING is especially desirable in hospitals and rest homes. In addition, patients can choose their own degree of comfort.

DETROIT STATLER HOTEL recently installed its first group of AIRditioners.

Modine AIRditioners are the quiet, fingertip answer to year-round comfort

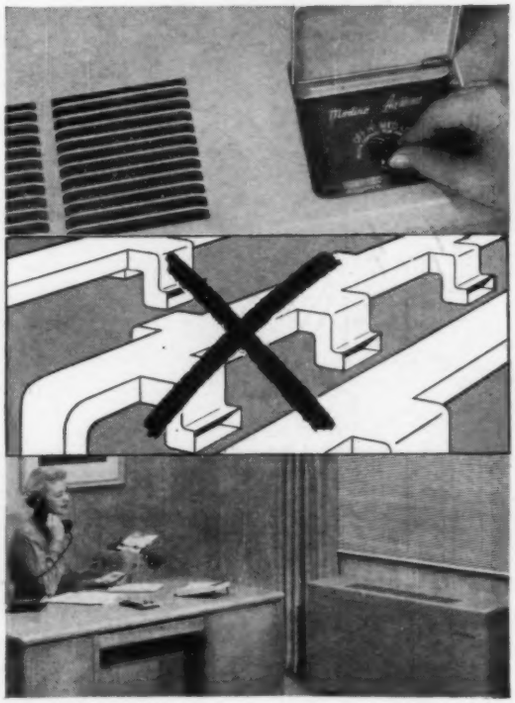
A TURN of the dial . . . and Modine AIRditioners deliver the desired air-conditioned comfort—quietly, instantly, smoothly. This fingertip control provides personalized air conditioning for hotels, office buildings, apartments, hospitals, motels. AIRditioners assure initial economy, performance and style in new buildings. And they're ideal for remodeling existing ones . . . replacing unsightly radiators with attractive heating-cooling units.

Ask the Modine representative listed in your classified phone book for Bulletin 755 — or write Modine Mfg. Co., 1510 DeKoven Ave., Racine, Wisconsin

FINGERTIP control permits room occupants to select their degree of comfort.

NO DUCT WORK is needed. AIRditioners use same piping for water supply and return, plus drain . . . cost less to install.

A CHOICE of four enclosure types in capacities from 2/3 to 2 tons.



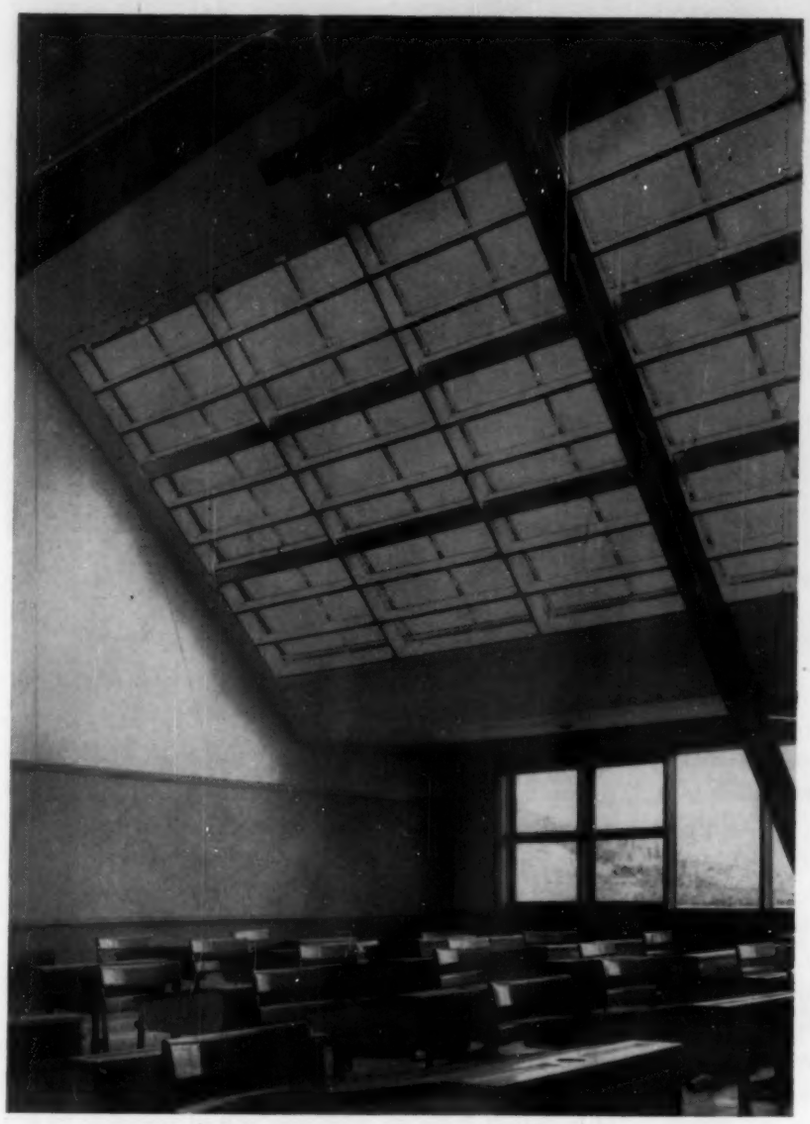
Modine Airditioners*

*Trademark In Canada: Sarco, Ltd., Toronto A-1314

Bring in the DAYLIGHT

Filter out GLARE and HEAT

with AKLO® GLASS by BLUE RIDGE



Aklo Glass helps you meet a constant design challenge . . . to get the full benefits of daylight without the natural discomforts of sun heat and glare.

This California classroom illustrates a successful solution:

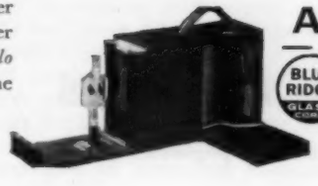
Frosted *Aklo* Heat Absorbing Wire Glass was used in skylights to subdue sun and sky brightness and to reduce direct heat from the sun. Its blue-green color even made the interior *look* cooler. ¼" *Aklo* reduces transmission of the sun's radiant heat energy as much as 44%.

These are good reasons you see *Aklo* widely used in floor-to-ceiling fenestration in up-to-date factories, offices and other buildings all across the nation. It's specified for better seeing, greater comfort, better workmanship, better employe relations.

Aklo Glass is readily available from your L·O·F Glass Distributor or Dealer (listed under "Glass" in phone book yellow pages). Or write to Libbey·Owens·Ford Glass Co., 608 Madison Avenue, Toledo 3, Ohio.

P. A. Walsh School, Morgan Hill, California
Architect: Robert Stanton, Carmel, Calif.

Phone for this test. Your L·O·F Glass Distributor or Dealer can show you, with a radiometer demonstration kit, how much *Aklo* reduces sun glare and heat. Phone him today.



AKLO GLASS FILTERS DAYLIGHT

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made by Blue Ridge Glass Corp.

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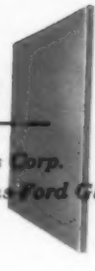
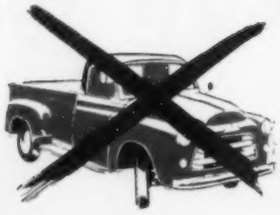
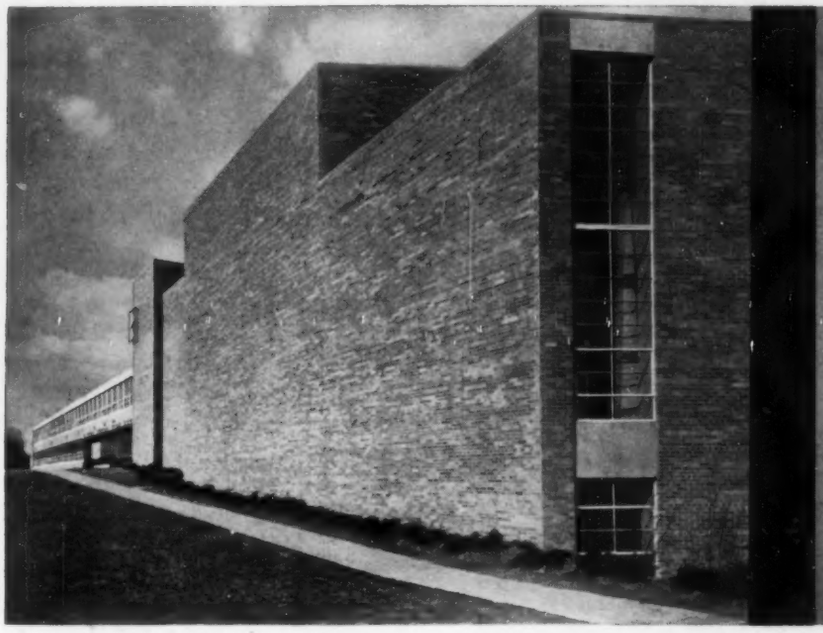




No service calls in 2 years with "*Cruising Speed*" operation



Kewanee Type "C" Boiler used in Canton High School. Corrugated crown sheet is self-cleaning, adds strength, effective heating surface. A compact boiler requiring less floor space, yet maintains high efficiency.

KEWANEE
reserve plus rated

Canton High School, Canton, Illinois
Architect—Atkins, Barrow & Lasswith (now Atkins, Barrow & Associates) Urbana, Illinois
Engineer—Consulting Engineering Service, Urbana, Illinois
Heating Contractor—Hays Plumbing & Heating Company, Urbana, Ill.

■ Canton High School votes experience the best teacher in selecting boilers...

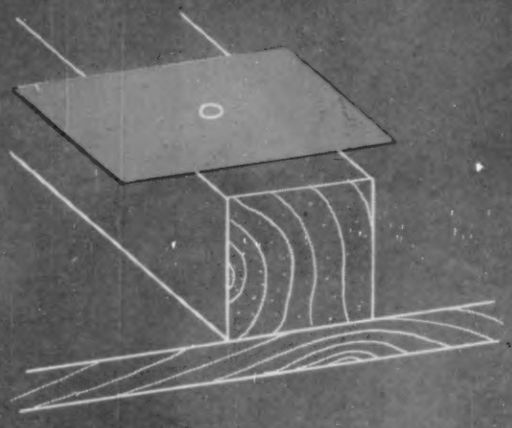
There's an old saying that goes like this . . . "Experience is the best teacher." The Canton High School, Canton, Illinois, prides itself on its fine academic teaching staff. But for knowledge of boiler operation, old "Dr. Experience" gets the call. So, when it came to selecting a boiler, school executives, the architect, engineer and contractor took a page from the past and chose Kewanee Reserve Plus Rated Boilers. Yes, experience proved Kewanee "cruising speed" boiler operation gave trouble-free performance with lower fuel and maintenance costs—higher efficiency, too. In 2 years there has not been one single service call. But that's easy to understand because "cruising speed" boiler operation guards against breakdown—there's less strain, less wear, higher efficiency, lower maintenance and fuel costs. And Kewanee reserve takes care of fluctuating demands and high power peaks, because Kewanee Boilers are rated on nominal capacity which guarantees 50% extra built-in power. Boilers rated on maximum capacity have no reserve to meet emergencies—must operate constantly at top speed—require more maintenance. So take a tip from those who have learned from experience and choose Kewanee Boilers. You'll be money ahead if you do. KEWANEE BOILER DIVISION OF AMERICAN-STANDARD, 101 Franklin St., Kewanee, Illinois.

KEWANEE BOILERS

You can depend on Kewanee engineering

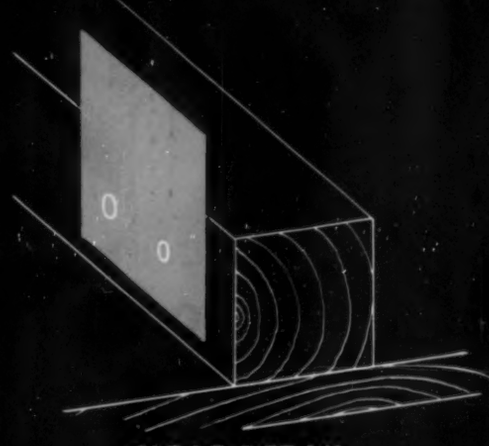
HOW WOULD YOU DO IT?

. . . this way?



CLEAT DETAIL
BATTEN SEAM ROOF
Fig 1

. . . or this way?



CLEAT DETAIL
BATTEN SEAM ROOF
Fig 2

In the Fig. 1 detail cleats for a batten seam roof are placed across the top of the batten and secured with one nail.

In Fig. 2 detail cleats are placed on the side of each batten and each cleat is secured by two nails.

While the method shown in Fig. 1 might, at first, seem easier and quicker, it must be remembered that the wind blowing over a roof causes a suction or up-lift on the roofing pans. With the nail placed on top of the batten, the nail is subjected to a straight upward pull, whereas with the nail placed on the side of the batten, the nail is subjected to a shearing action that does not tend to loosen the nail. It is always advisable to use two nails as a single nail never provides a good fastening.

NOTE: The job of attaching the cleats to the side of the battens is made easier if this is done when battens are on the ground.

We do not wish to presume to tell you how to design your structures or dictate their construction. For there are many satisfactory methods of installing gutters, leaders, roofs, flashing, coping covers, etc., which, of necessity, change with the design and type of construction and materials used. The purpose of this advertisement is to point out the methods of installation that have been proved by many years of use, and backed by more than a century and a half of experience in working with copper, to be the most satisfactory techniques. You will find these methods in Revere's 110 page brochure, "COPPER AND COMMON SENSE." Send for a copy today. And remember: Revere has a staff of specialists known as Technical Advisors, whose experience qualifies them to render valuable service and advice regarding the use of metals in the building field. Feel free to consult with them at all times regarding the use of Revere Copper; you incur no obligation. Revere Technical Advisors may be contacted through the Revere Office nearest you.

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TYPICAL
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CONTINUOUS INSTALLATION

FOR AIR CONDITIONING
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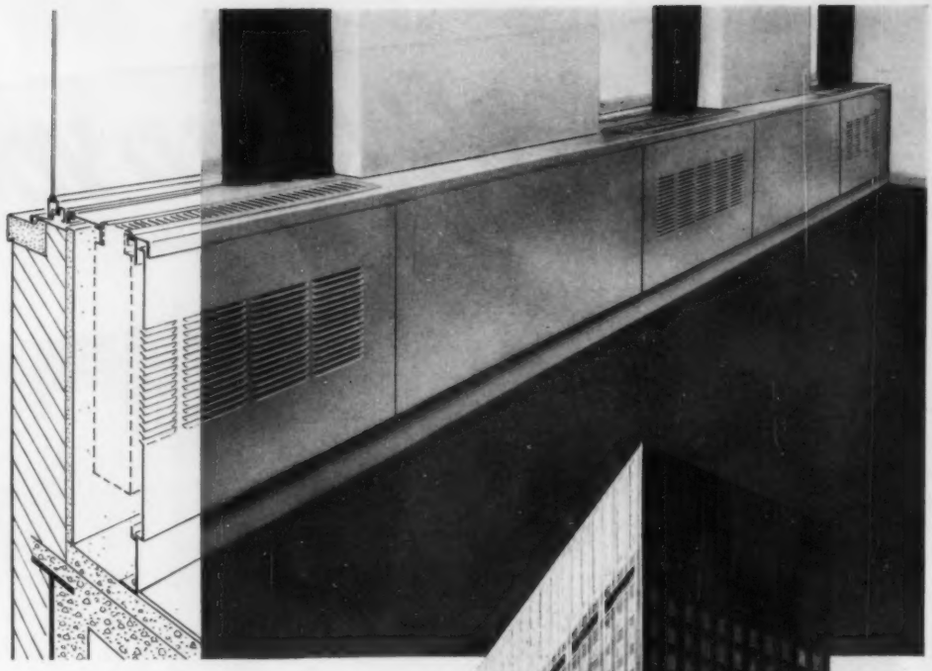
CONVECTORS and RADIATORS



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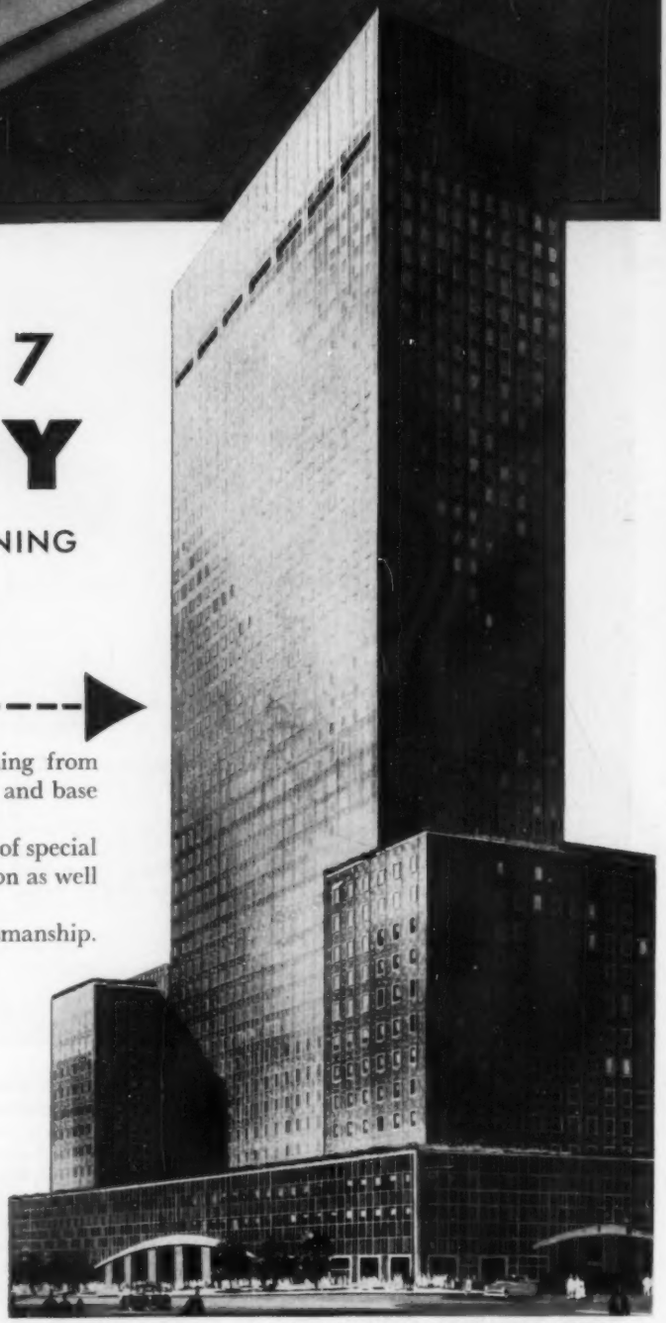
You can always depend upon POMEROY quality and craftsmanship.



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Owned by The Galbreath Corporation—John W. Galbreath and Peter B. Ruffin; Designed by Harrison & Abramovitz—John B. Peterkin; Built by The Turner Construction Company; Mechanical Engineering by Jaros, Baum & Bolles; Air Conditioning Enclosures by

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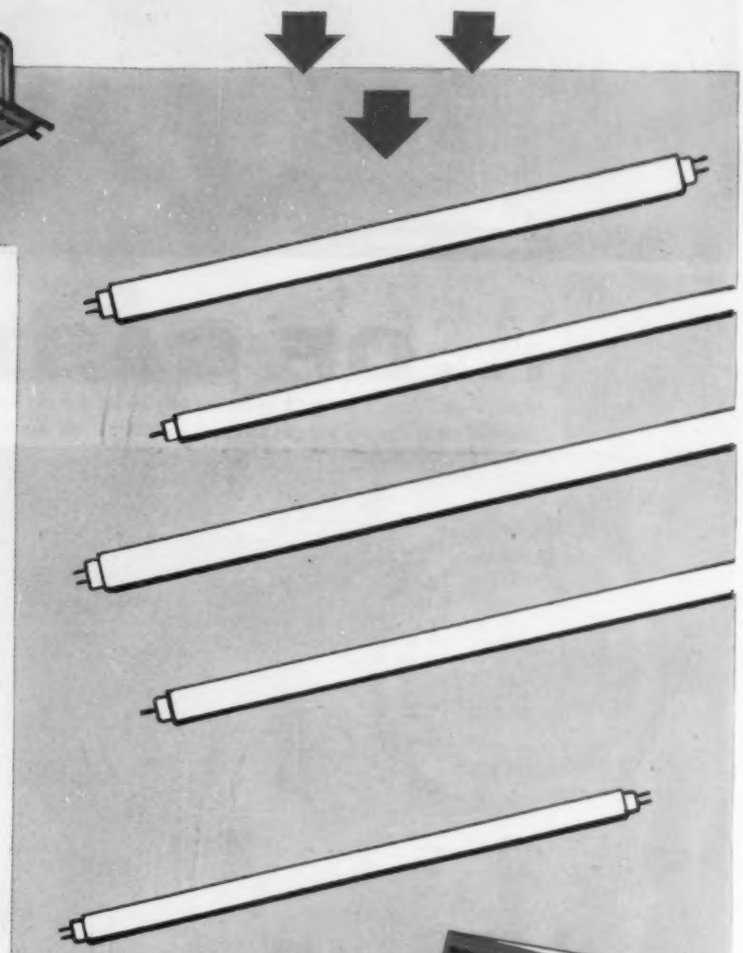
FABRICATION IN ALUMINUM, STAINLESS STEEL AND COATED STEEL

CERTIFIED CBM BALLASTS

...give you more economical Fluorescent Lighting

because they are "Tailored to the Tube"



Every type and size of fluorescent tube has its own specific electrical requirements. Thus, to get ideal performance and lighting economy, it is essential that the ballasts provide precisely the electrical needs of the tubes they operate.

CERTIFIED CBM BALLASTS are "Tailored to the Tube." Built to exacting specifications, then tested and checked by ETL, an independent agency, CERTIFIED CBM BALLASTS are a dependable assurance of both satisfactory and economical fluorescent lighting.

Certified CBM Ballasts

PROVIDE:

LONG BALLAST LIFE
FULL LIGHT OUTPUT
LONG LAMP LIFE
TROUBLE-FREE OPERATION

all of which contribute to easier maintenance and fluorescent lighting economy.

Eight of the country's leading manufacturers of ballasts make CERTIFIED CBM BALLASTS. Participation in CBM is open to any manufacturer who wishes to qualify.

Send for free booklet, "Why It Pays to Use CERTIFIED CBM BALLASTS in Fluorescent Lighting Fixtures."

CERTIFIED BALLAST MANUFACTURERS
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SOIL AND WASTE PIPING

There's just one way to be sure the soil, waste and vent system for any building will be as sound as the basic structure you design: *write it into the specs.* Protect your clients from piping failure due to the use of materials that can rust out . . . or crack . . . or deteriorate under the stresses of years of service. Here's how one simple spec can assure *permanent* drainage lines from street to roof top.

. . . OF CAST IRON!

Specify Cast Iron Soil Pipe and Fittings throughout. Rugged, time-tested cast iron means trouble-free service for the life of the building. Cast iron prevents joint corrosion – the most frequent cause of drainage pipe failures inside buildings. It can be written into any specs, because cast iron is the *only* material accepted in *all* codes – with good reason: **Cast Iron is for Keeps!**

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FOR THE NEW
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OF *DRAGNET* * FAME...

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(ELECTRIFIED CONCRETE JOIST FLOORS)

provide 100% electrical flexibility at low cost

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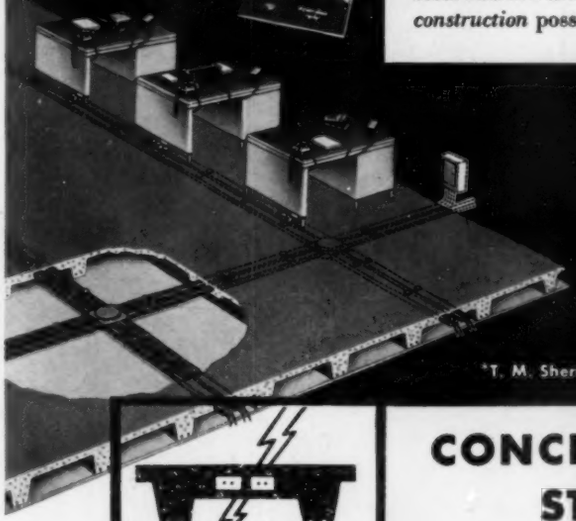
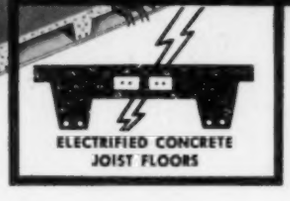
R/C Duct Floors (electrified concrete joist floors) provide the officers and personnel of the new Los Angeles Police Headquarters with a *complete* network of underfloor electrical outlets for power, light, telephone, and intercom systems—at a new low cost. Additional outlets can be connected to convenient risers in minutes. There is no ripping up or drilling through floors and ducts. R/C Duct Floors, which meet all building code requirements, consist of *standard* steel electrical distribution ducts set in the *structural* slab of reinforced concrete joist floors . . . no expensive fill or topping is needed. Cost studies show that R/C Duct Floors average 19% less than cellular steel floors. Furthermore, the reinforced concrete frame made *rapid construction* possible.



*T. M. Sherry TV, Inc.

Los Angeles Police Administration Building	Building
Associated Architects: Welton Becket, F.A.I.A., and Associates and J. E. Stanton	Architects
Associated Structural Engineers: Murray Erick and Paul E. Jeffers	Engineers
General Contractors: Morrison-Knudsen Co., Inc. and Ford J. Twaits Co. (joint venture)	Contractors



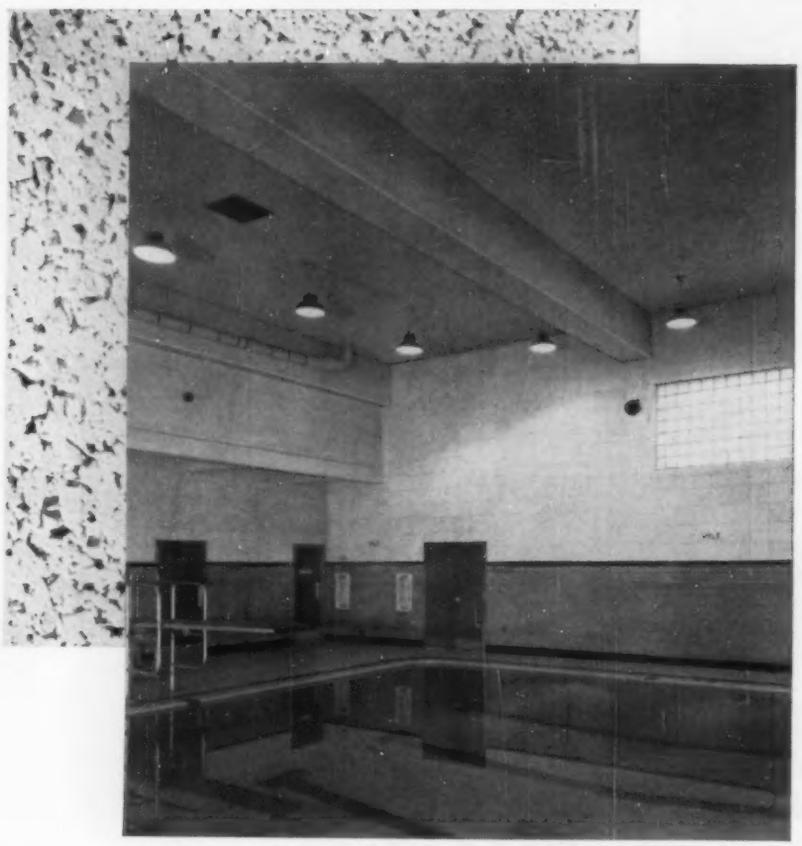
CONCRETE REINFORCING STEEL INSTITUTE

38 South Dearborn Street • Chicago 3, Illinois

THE ACOUSTICAL SPEC

Frequent washing to meet sanitary standards will not affect the Arrestone ceiling in this kitchen serving area. Arrestone is completely incombustible and soaks up as much as 90% of the sounds that strike it.
Metropolitan Museum of Art, New York, N. Y.

MOISTURE RESISTANCE . . . Where humidity is a problem, which acoustical material is best?



Moisture can't damage this good-looking ceiling of Armstrong Corkoustic nor impair its acoustical efficiency. An all-cork material, Corkoustic is finished with two coats of smooth white paint.
Brownsville Boys' Club, Brooklyn, New York

Excessive humidity in such areas as swimming pools, commercial kitchens, hospital hydrotherapy rooms, and special manufacturing areas calls for an acoustical material with exceptionally high moisture resistance. Because cork has a natural resistance to moisture, a material like Armstrong Corkoustic is usually specified.

Corkoustic's pure cork composition cannot be damaged by moisture, maintains its acoustical efficiency under the most humid conditions. In addition, the extra insulation value of Corkoustic prevents condensation from becoming a serious problem.

Where an especially high degree of acoustical efficiency is required, Armstrong Arrestone may be used in humid areas that are well ventilated. Arrestone is a perforated metal-pan material, available in either rustproof aluminum or enamelled zinc coated steel. Humidity or repeated scrubbings cannot harm Arrestone's metal pan nor will average moisture conditions impair the acoustical efficiency of its mineral wool backing.

Corkoustic and Arrestone are two of the complete line of Armstrong sound-conditioning materials. Call in your Armstrong Acoustical Contractor for helpful advice on the entire line. With a wide range of special features to select from, there's an Armstrong material that meets the requirements of every job.

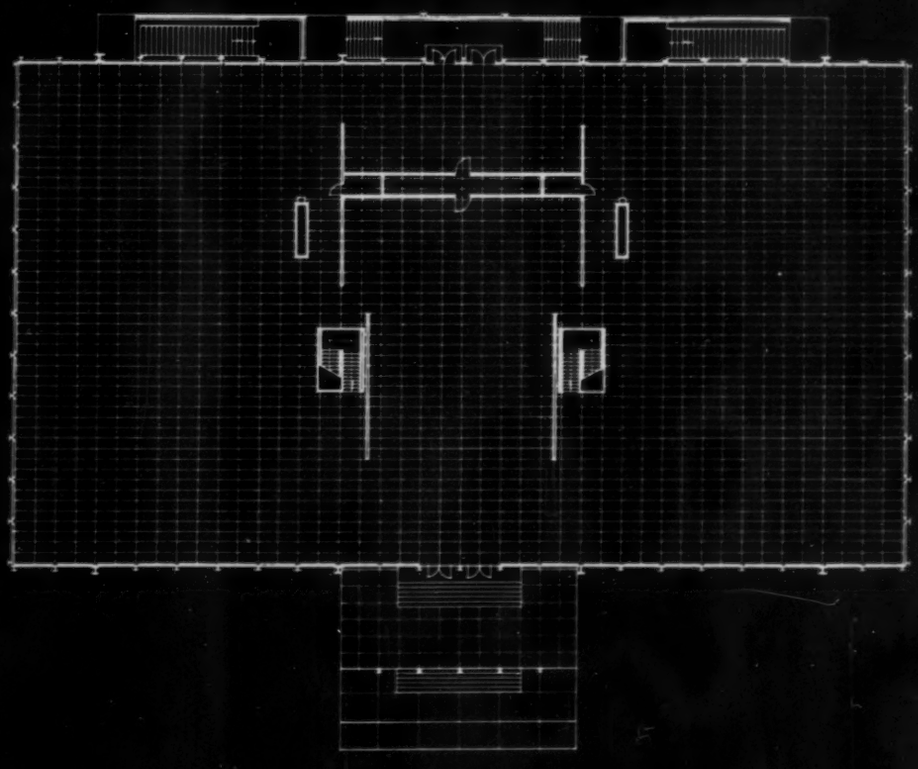
For the free booklet, "Armstrong Acoustical Materials," write Armstrong Cork Company, 4208 Rock Street, Lancaster, Pennsylvania.

*TRADE-MARK

Armstrong ACOUSTICAL MATERIALS

Cushiontone® • Travertone* • Crestone* • Arrestone® • Minatone® • Corkoustic® • Perforated Asbestos Board

MIES VAN DER ROHE



MIES VAN DER ROHE has contributed his latest — though not final — building for the Illinois Institute of Technology. The S. R. Crown Hall is not quite finished but its recent dedication and the undeniable importance of its architect may persuade editorial coverage from even that part of the architectural press which recently implied disapproval of early reporting.

Arriving from downtown Chicago or from many parts of the campus one comes first to the north — or rear — of the building and passes around it into what was W. 34th St. but has been transformed into a grassy, tree-planted forecourt; a welcome area on this checkerboard campus in which many of the squares are still occupied by derelict buildings awaiting eventual destruction.

The south front seen from this green foreground is an arresting, handsome statement of what the world has come to expect from Mies: a simple steel and glass volume, finely proportioned, well scaled, highly organized and carefully made. The four great girders from which the roof is hung provide dramatic interruptions in the quiet silhouette.

The steps and the entrance platform are completely comfortable and pleasantly poised. This whole method of gaining elevation — as in Mies' Farnsworth house and for that matter in primitive platform constructions all over the world — is a delight, as well, to the mind which recognizes that the steps belong specifically to neither the ground nor the wall plane and appreciates their not clogging the intersection. Although the large, low, lightly floating platform makes difficult the removal of leaves and windblown trash this seems a small price to pay for the satisfactions gained.

The entrance doors are easily found but are unsheltered — presumably in the interest of not interrupting the wall plane. Once through them one is immediately in the big room. There is no vestibule but whatever slush and grime is tracked in during Chicago's winter will show little against the dark gray and white flecked terrazzo floor. The walls consist of 10 ft glass bays — 22 along the north and south and 11 along the east and west. These are identical except that the 6 center ones on the north and south contain clear glass below

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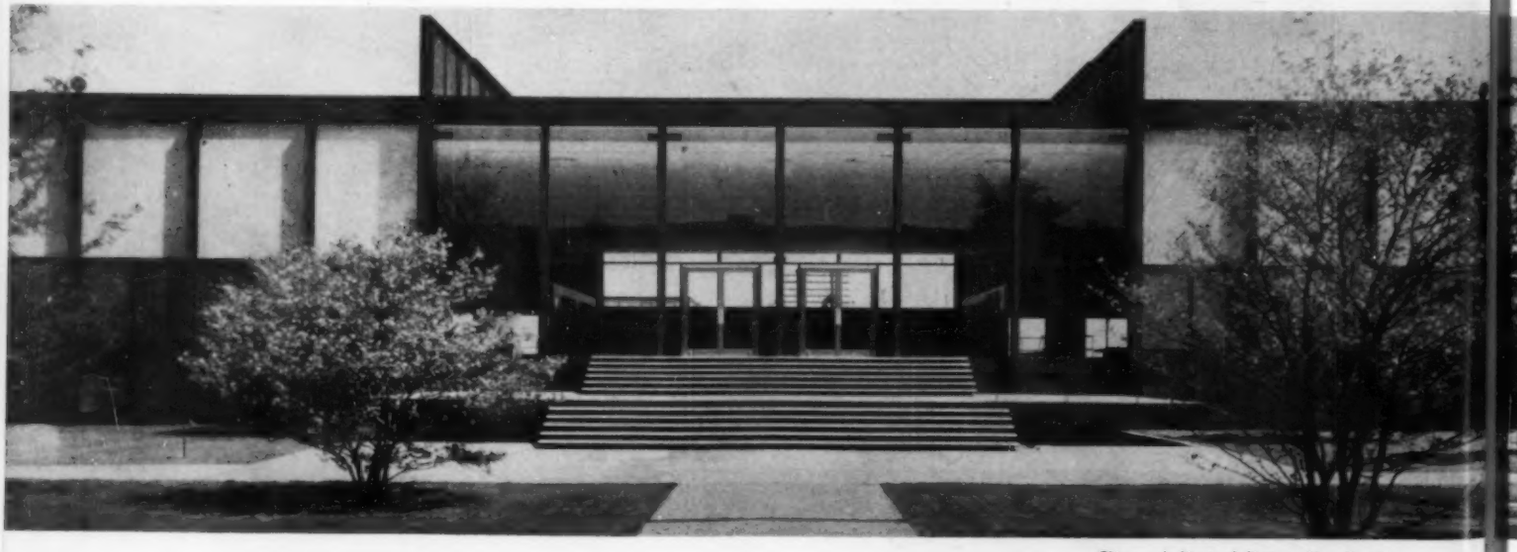
Twelve steps up



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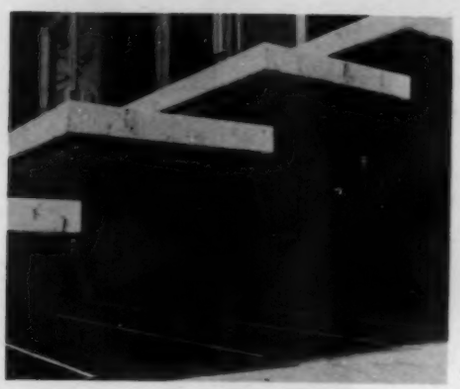
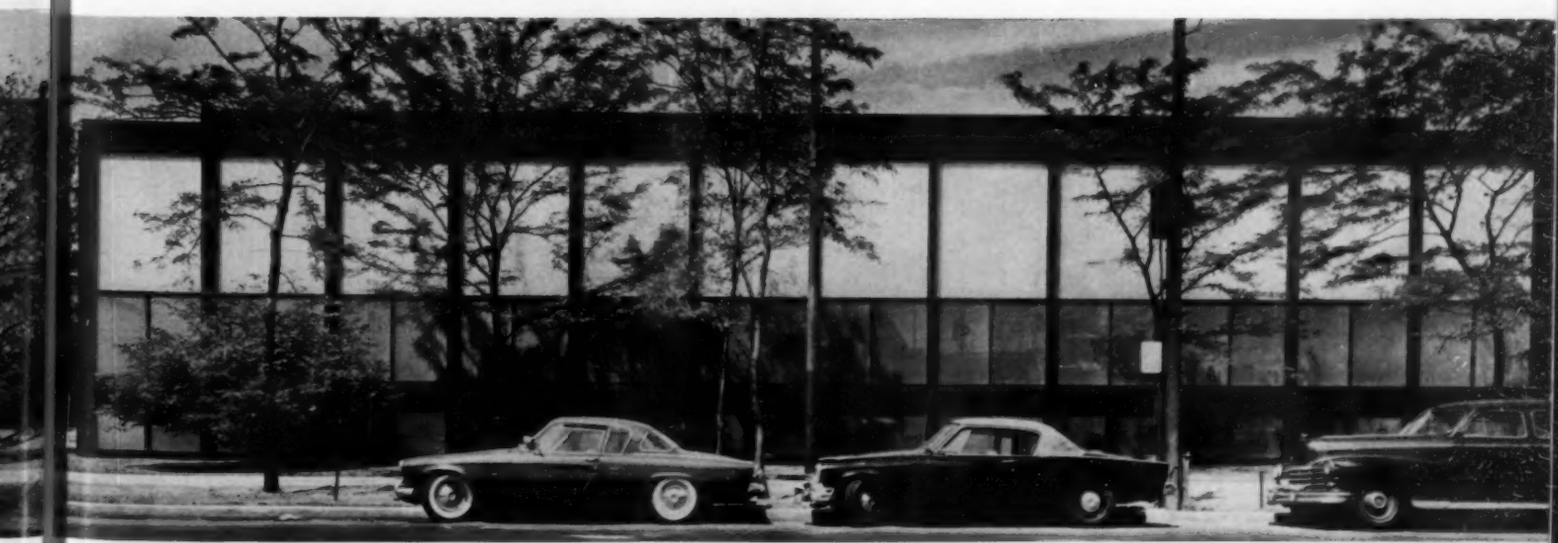


Light and logical

A small price

An unclogged intersection

Steel, glass and ivy



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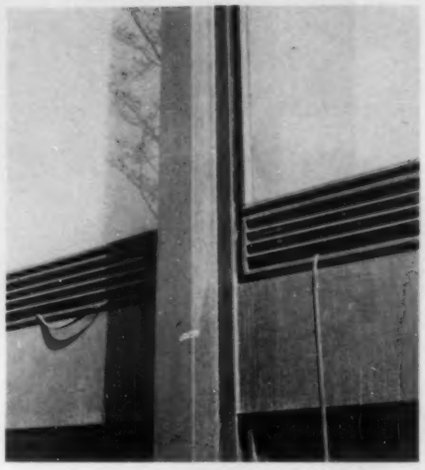
the door head mullion line and do not have the louvered ventilators at the sill. Elsewhere the lower portions are sandblasted glass with Venetian blinds above.

The regularity of the bay system has nowhere been interrupted and is refreshing in contrast to the hasty expediency or simple lack of concern which characterizes so many buildings. Against this regularity the tracery of the locust leaf shadow patterns is a subtle overlying texture. The walls are finely conceived and beautifully done. The ceiling falls something short. The irregularly fissured acoustic tiles are carefully interrupted by the flush, egg crate louvered fixtures which — in groups of four — are organized along with the air diffusers and sprinkler heads in strict relationship to the bays but still produce a busy effect which most will find in sharp contrast to the other surfaces.

As for the space itself: it is big. It is big and it is empty in a way which has nothing to do with furniture or inhabitants but derives from a sense of the vague, generalized purpose of the room. The evidence of intended occupancy and specific use is slight. One has the feeling that it is only incidentally a school of architecture and design — though that *is* its assigned purpose — and that in some more prosperous tomorrow the administration will rid it of this temporary, cluttering function and allow it at last to serve as a pavilion where all the students and faculty of engineering and the sciences may gather quietly for tea and a pipe and thoughtful talk of fission and the future. At any rate the Chicago fire inspector was in some doubt about the building's function. It is reported by a member of the school administration that as the building neared completion it was classed not as a school but as an industrial building and was in consequence required to have the sprinkler system which somewhat complicated the ceiling — at this stage — at a cost of around $30,000.

But for the present the great room is I.I.T.'s department of architecture and the Mies-designed drafting tables (without drawers) bear solitary witness to the fact. These are in each end of the room in areas slightly separated from the center by low oak plywood partitions. At right angles to these and about 8 ft apart two

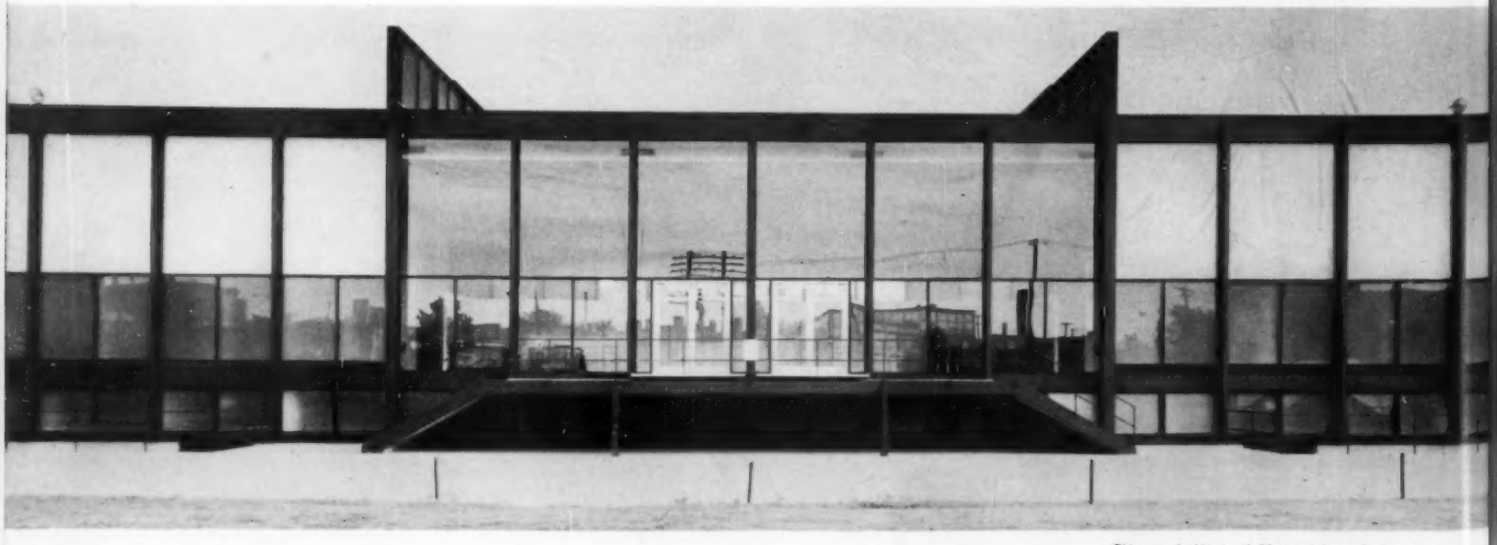


AR

Against this flawlessness

AR

One in one hundred and eight



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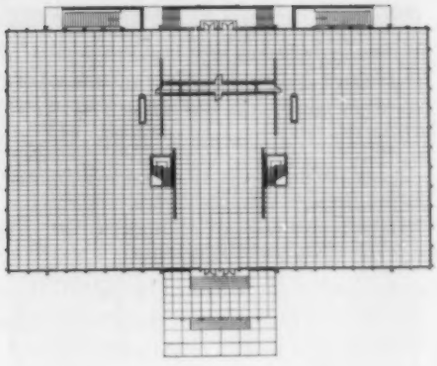
Out to the forecourt



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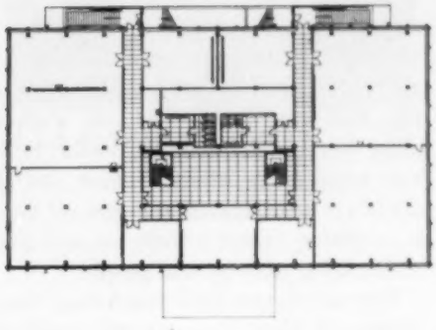
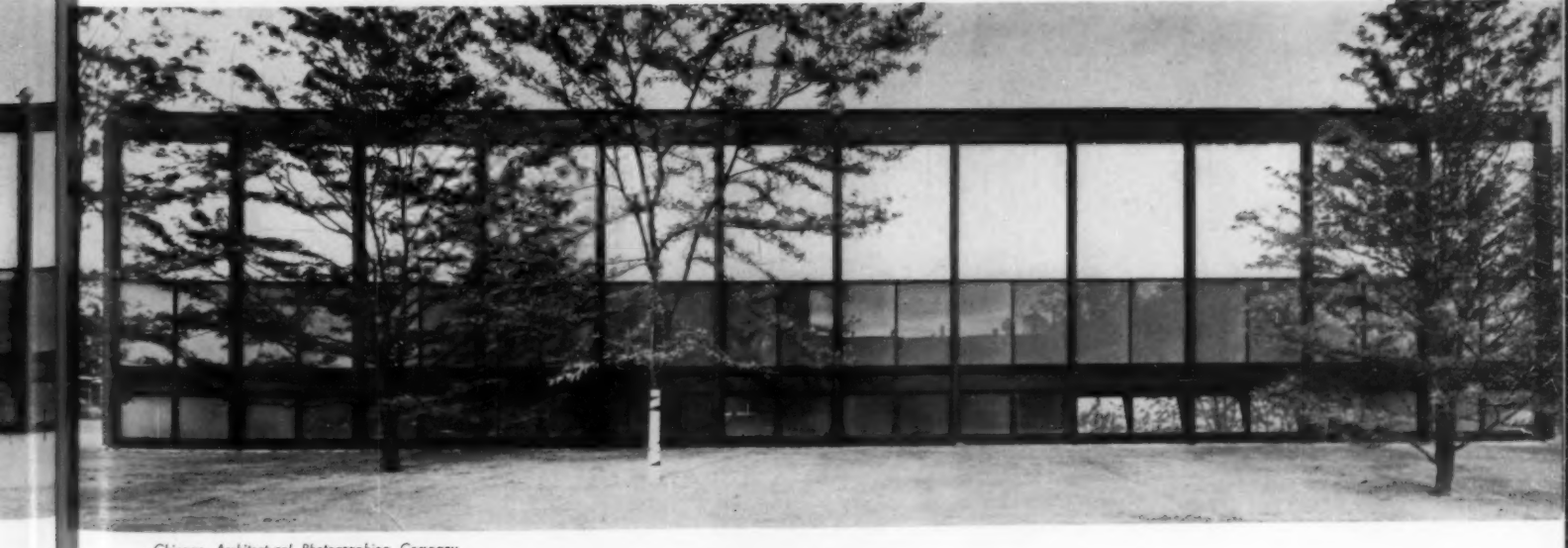
Evidence of use





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more low walls form the only storage area in the room and separate the space of the north lobby area in which are located the desks of the architecture and design directors and their secretaries from the space opposite the south entrance which is variously assigned to exhibition, assembly or reading. On each side of this area are the duct and mechanical shafts and the stairways to the basement.

There, on each side of the unfinished student lounge, north-south corridors give access to the toilet and machinery rooms and to the quarters of the design department. Except for a single room furnished informally as a lecture space largely for art education classes and another smaller one housing desks and files of five or six teachers, the basement is divided into workshops for the photography, visual, shelter and product design programs.

Unlike the drafting spaces the workshops are furnished with sinks and although there is no integrally organized storage space on either floor the design students have constructed their own cabinets and shelves. Perhaps the architecture students will be permitted to follow suit. On the other hand the storage of drafting paraphernalia, models and drawings may be just as unnecessary as the private offices, lecture rooms, sinks and blackboards appear to be in this particular architectural curriculum. Certainly it would be mistaken to allow this to weigh *too* heavily in evaluating the building. And in the same vein, the cracked glass, the dangling weather-stripping, the fallen ceiling tiles — which can happen anywhere — must not, because they so stand out here against the general flawlessness, be seen as anything except a welcome sign that the building *is* really being used by real people.

For no matter how much our time needs palpable images of ideals beyond the threshold of the purely functional, the images will have significance only if they can be discovered to have had their point of departure in the humble as well as the heroic realities. Measured against this standard it may be fair to suggest that this building is at once both more *and* less than a school of architecture, planning and design.

A miscellaneous shelter

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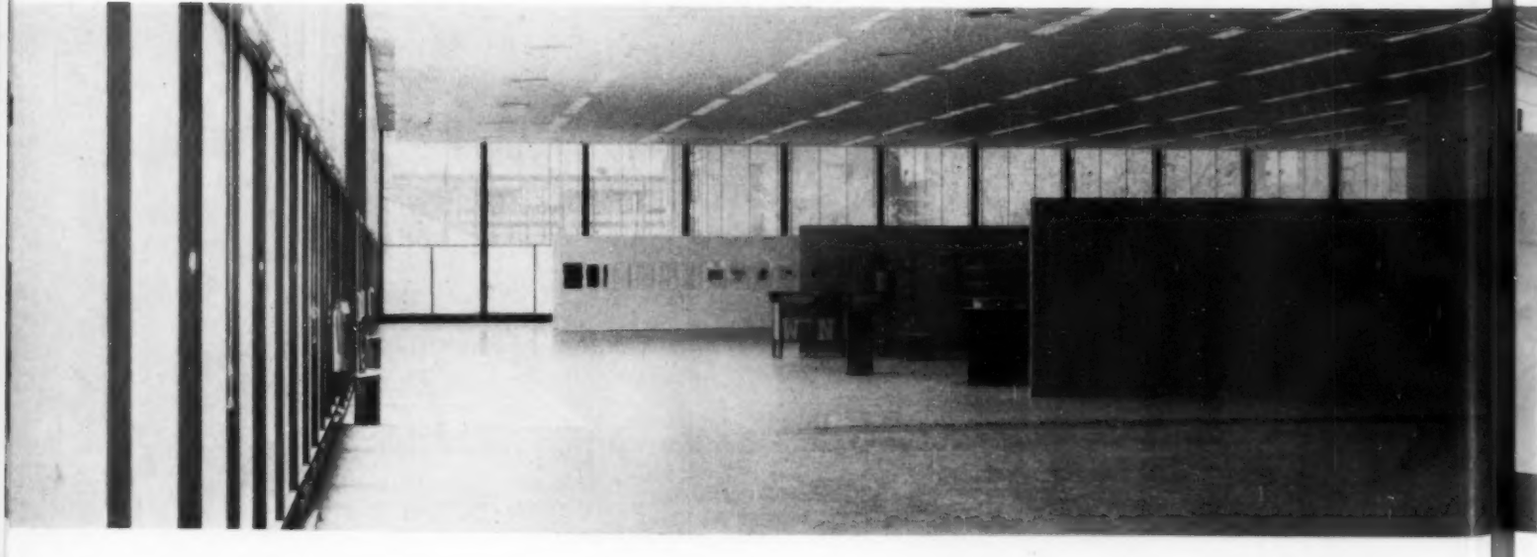
For deliveries



Up from the lounge

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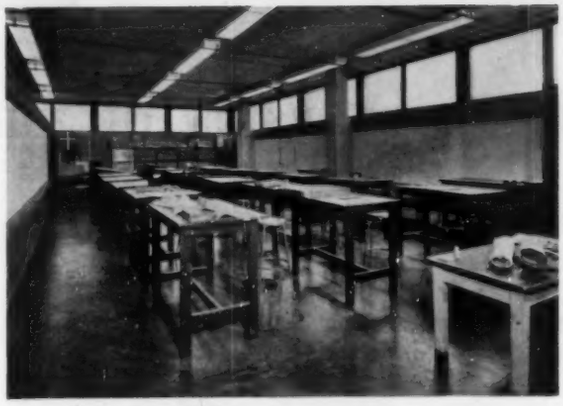
A corridor to Design



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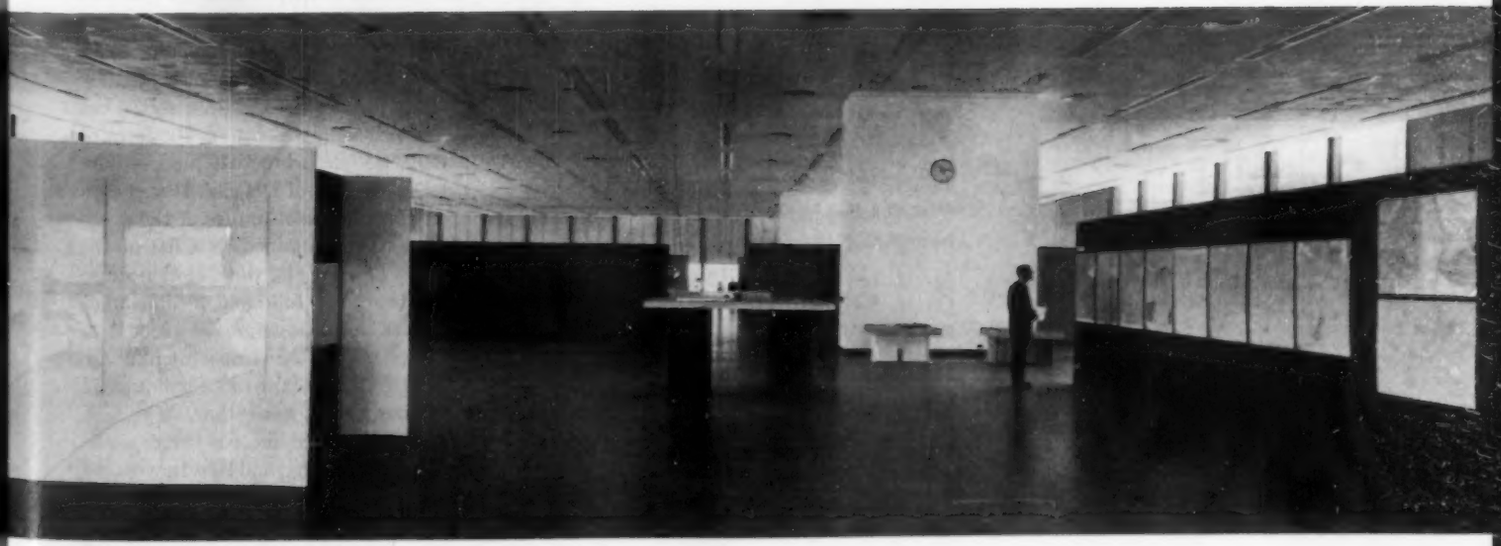
Typical design workshop



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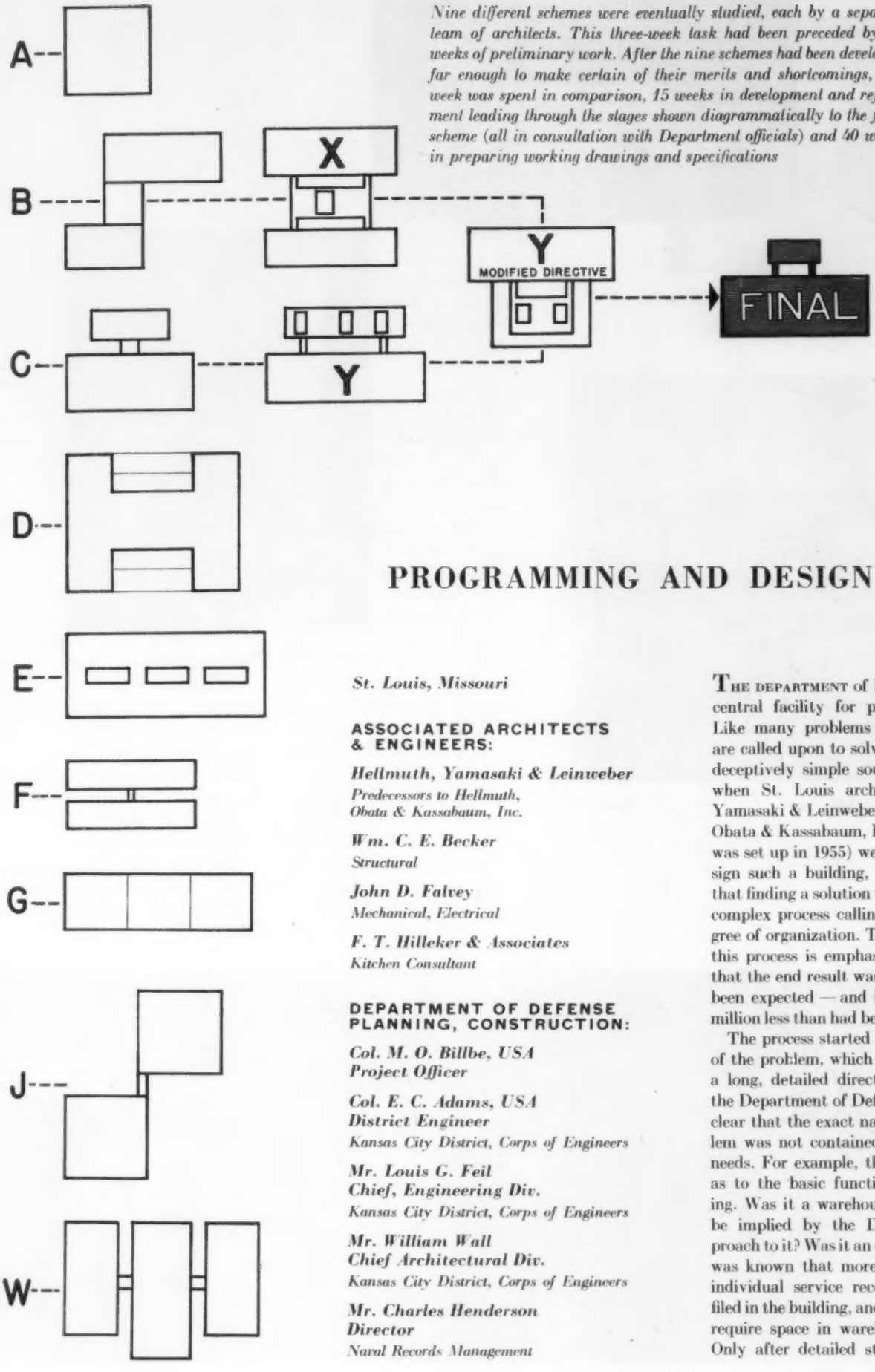


Nine different schemes were eventually studied, each by a separate team of architects. This three-week task had been preceded by 16 weeks of preliminary work. After the nine schemes had been developed far enough to make certain of their merits and shortcomings, one week was spent in comparison, 15 weeks in development and refinement leading through the stages shown diagrammatically to the final scheme (all in consultation with Department officials) and 40 weeks in preparing working drawings and specifications

PROGRAMMING AND DESIGN OF THE

St. Louis, Missouri

ASSOCIATED ARCHITECTS & ENGINEERS:

Hellmuth, Yamasaki & Leinweber
Predecessors to Hellmuth, Obata & Kassabaum, Inc.

Wm. C. E. Becker
Structural

John D. Falvey
Mechanical, Electrical

F. T. Hilleker & Associates
Kitchen Consultant

DEPARTMENT OF DEFENSE PLANNING, CONSTRUCTION:

Col. M. O. Billbe, USA
Project Officer

Col. E. C. Adams, USA
District Engineer
Kansas City District, Corps of Engineers

Mr. Louis G. Feil
Chief, Engineering Div.
Kansas City District, Corps of Engineers

Mr. William Wall
Chief Architectural Div.
Kansas City District, Corps of Engineers

Mr. Charles Henderson
Director
Naval Records Management

THE DEPARTMENT of Defense wanted a central facility for personnel records. Like many problems which architects are called upon to solve, this one had a deceptively simple sound; but in 1951 when St. Louis architects Hellmuth, Yamasaki & Leinweber (now Hellmuth, Obata & Kassabaum, Inc.; the new firm was set up in 1955) were selected to design such a building, they were aware that finding a solution would be a highly complex process calling for a great degree of organization. The importance of this process is emphasized by the fact that the end result was better than had been expected — and it cost almost $7 million less than had been anticipated.

The process started with a statement of the problem, which took the form of a long, detailed directive prepared by the Department of Defense. It was soon clear that the exact nature of the problem was not contained in a list of the needs. For example, the question arose as to the basic function of the building. Was it a warehouse, as seemed to be implied by the Department's approach to it? Was it an office building? It was known that more than 38 million individual service records were to be filed in the building, and that they would require space in warehouse quantities. Only after detailed study could it be

Mac Mazuki

U. S. MILITARY PERSONNEL RECORDS CENTER

determined just how often these files were active and therefore how accessible, and to whom and for what, they must be.

The answer to these and many other questions lay in a thorough grasp of the functions of the building. So the first step was for the architects to examine the directive with care and to raise all the questions about it that seemed relevant. Then a conference was held with the officials of the Department who were concerned with the construction and use of the building. This conference answered some of the architects' questions, but it also emphasized areas where there were no answers. It became clear that the different Services — Army, Navy, Marines and Air Force — had differing needs. The Army keeps its files in metal file cabinets, the Navy in boxes on open shelves. The more the architects looked into the problem, the more they became convinced that if the new Center was to be satisfactory, an efficient functional system for the handling of records must first be evolved and *then* enclosed in a building. This was the only way they could be sure that the building would really serve its purpose.

The architects then inquired into methods of handling records. They talked to appropriate officials, visited existing facilities, investigated records handling by other organizations. They found that there did not then exist anywhere a really satisfactory system for efficiently processing records in the quantity here dealt with. They found no system to use as a pattern, but they did make an invaluable collection of data about what such a system must do.

To reduce this data to a workable form was the next step. The architects prepared an extensive study of the requirements: diagrammatic and statistical analyses of each part of the process, in terms of space required, of personnel, of exact functions to be performed, and of circulation of people and materials. Basic functional patterns became clear as this study progressed: The raw material for the files would enter through the Mail Room at the rate of 55 to 60 mail sacks containing 56,000 separate pieces per day. This incoming material would have to be accurately sorted and routed to appropriate offices. Speed was here essential to keep the entire process from getting bogged down at the start. The function also had to operate properly in reverse, to accommodate an equal flow of outgoing mail. Each incoming piece would undergo certain processes, varying with the nature of the item. Most of these processes were designed to be performed in successive steps, which necessitated a logical organization of the locations in which they were to be performed. Each item would ultimately end up in a permanent file. These permanent files must be accessible for the 56,000 daily references.

To these operational requirements had to be added the working and human requirements of the approximately 4,000 people who would ultimately staff the Center. Working conditions which would cut down the amount of walking through rows of cabinets, and would increase the efficiency of workers through good use of light and air, were obvious requirements. A cafeteria, rest rooms, access to parking and transportation — all had to be included and studied in relation to each other and to the operation as a whole.

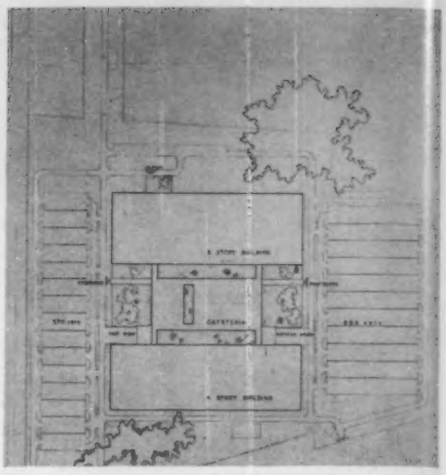
Out of this detailed program, which was developed in close consultation with the many groups and individuals in the different Services who were to use the building, came a statement by the architects of just how they saw the Department's needs. This was checked in detail with Department officers and revised to insure that it expressed a mutual understanding of these needs.

All this was done before building design was started. It had to be to establish the exact dimensions of the prob-

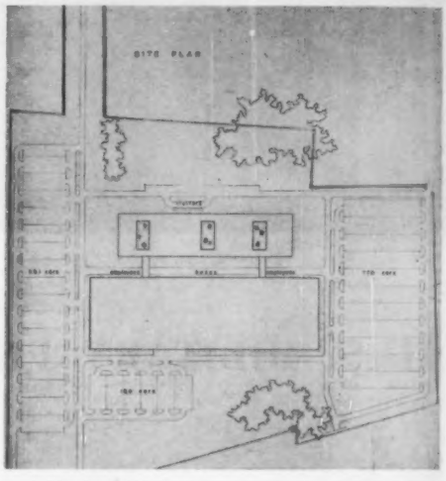
lem. For example, it made plain the fact that what was needed was not just a warehouse for storing records, but an efficient office mechanism for "working" the records.

One other simpler step was necessary before design could be started. The conditions within which the solution was to be worked out were stated in the Department's directive. Budget limitations, site, general specifications, and Department policies and regulations there set forth were discussed and clarified.

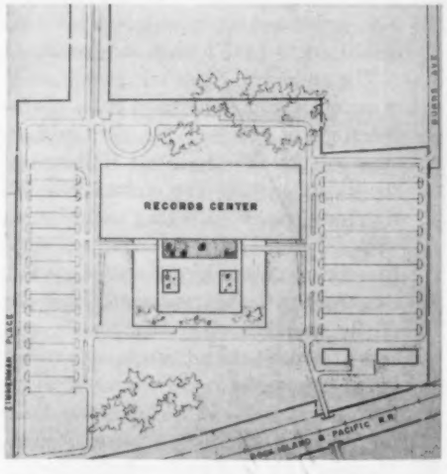
The all-important groundwork done, the architects could embark on the design phase. Even though some ideas as to possible solutions had naturally come to mind as needs were studied — others had been ruled out — there were still many different architectural answers which seemed to have certain value. The decision was made to take nine different possible plans and to develop each independently of the others to a stage which would permit its strong and weak points to merge clearly. To take one example of this process, the square six-story-and-basement building originally envisioned by the Department was explored in all its variations, and the architects eventually concluded that the main advantage was (to quote from their report) "the maximum floor area was enclosed by the minimum perimeter, which permits certain economies." But they also found serious disadvantages: ". . . The primary basis for the decision to eliminate this scheme from further consideration was the impossibility of providing each department with its area requirements as set forth in (the study of needs) and still maintain the necessary functional relationship with other departments which formed the very basis for the construction of the project." Other disadvantages, such as the dark center inherent in the square shape and the



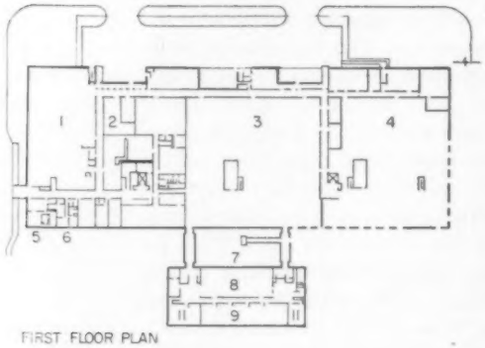
SCHEME X *was one of two principal developments resulting from study of nine original schemes. At about the time it was developed, it was decided to use standard bays throughout rather than special sizes for each Service*



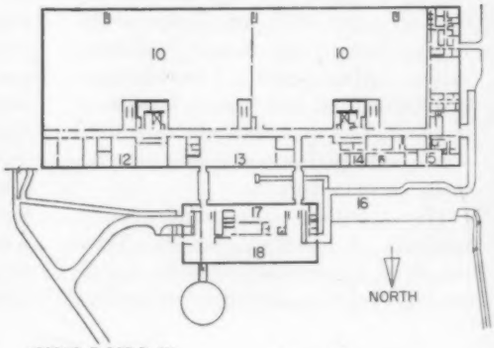
SCHEME Y *was the other principal early development. Here space for all Services is in one structure, with administration, cafeteria and recreation in the smaller, lower unit*



SCHEME Y, MODIFIED DIRECTIVE, *resulted from comparative study of Schemes X and Y, was the basis for modification of the Department's original design directive*



FIRST FLOOR PLAN



SECOND FLOOR PLAN

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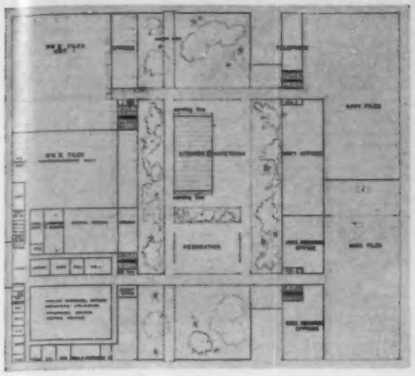
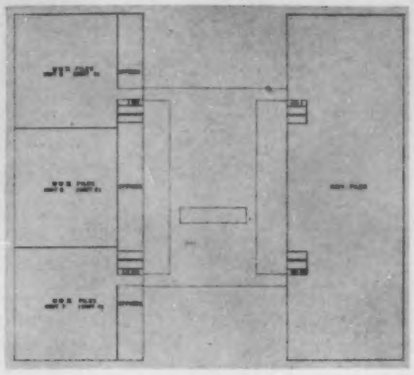
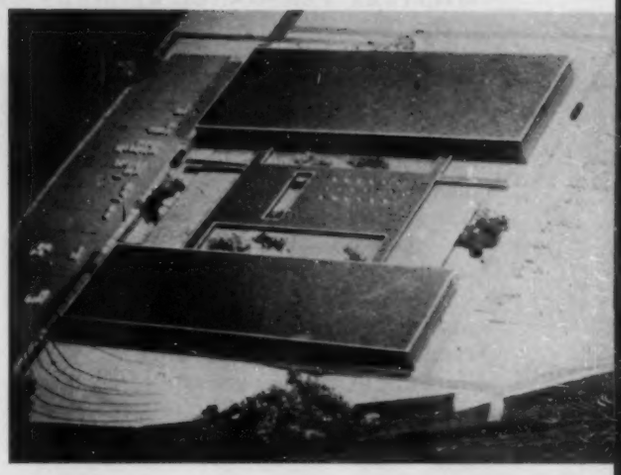
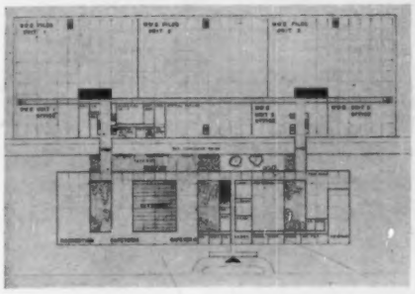
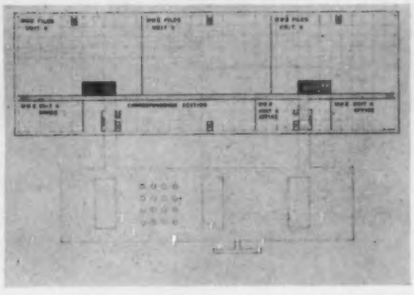
FINAL SCHEME *got into working drawings 15 weeks after the nine original schemes had been jointly studied. Note modular bays, files directly accessible to clerical workers, easy expansibility*

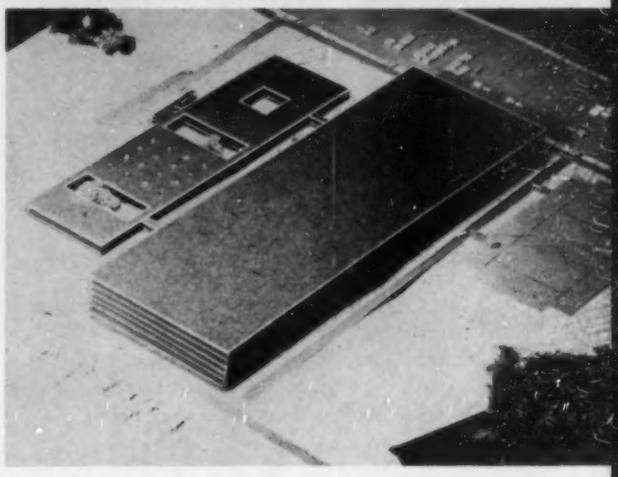


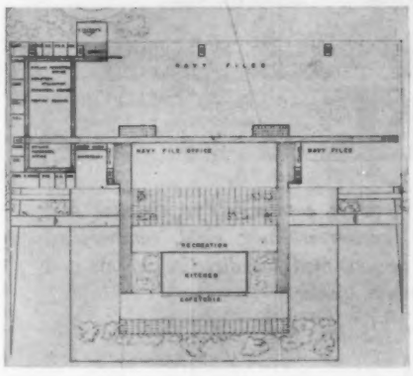


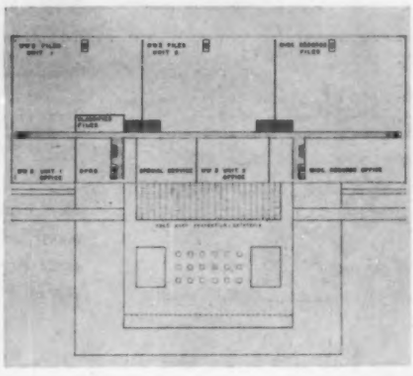


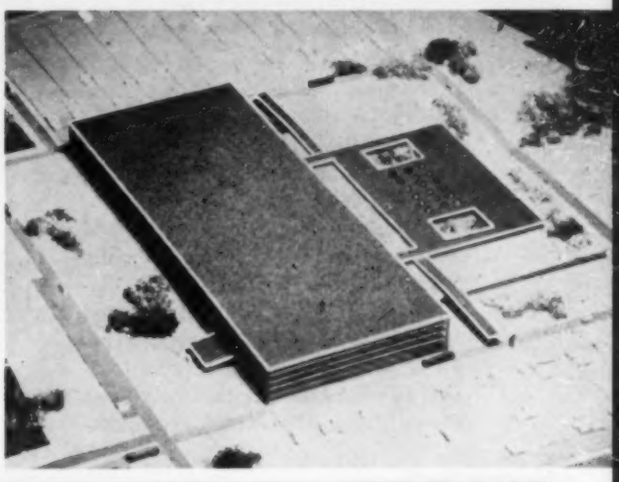




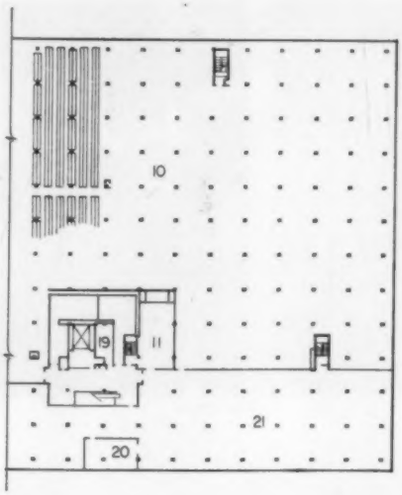


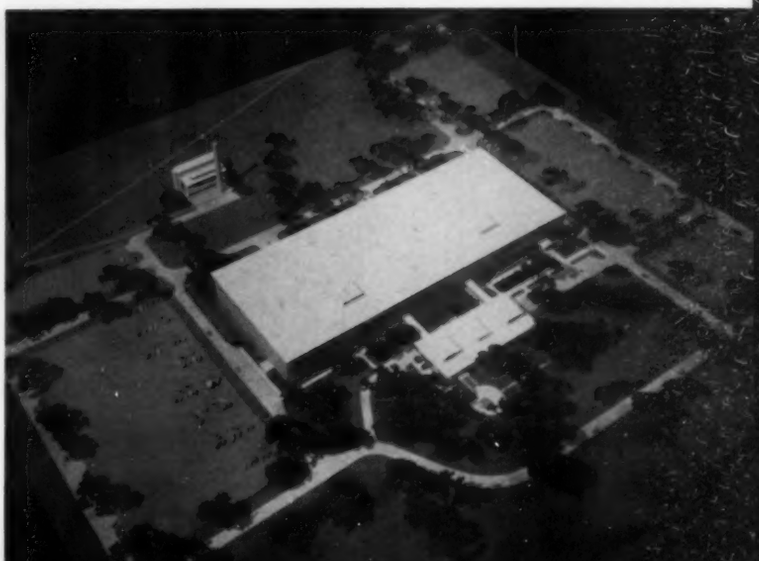






1. Mail and Message
2. Salvage
3. Records, Staging and Storage
4. Post Property Supply & Warehouse
5. Labor
6. Custodial
7. Court
8. Assembly
9. Meeting Rooms
10. Navy Files
11. Mechanical Equipment
12. Civilian Personnel
13. Navy Offices
14. Central Headquarters
15. Guard
16. Visitors Parking
17. Kitchen
18. Cafeteria
19. Store Room
20. Office
21. General Office



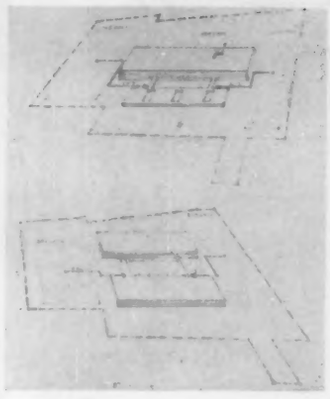


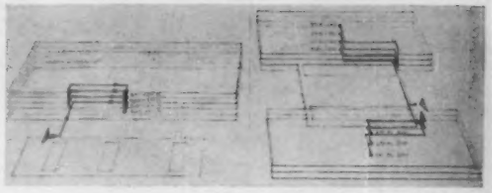
need for multiple vertical transportation, were also noted.

Some of the schemes studied emphasized one aspect of the problem, some another. One, based on the fact that dimensions of a standard structural bay for storage areas was different for the different Services, presupposed a plan in which the structure would be closely adapted to the exact needs of each. When developed far enough, this scheme, too, was found to have serious shortcomings: the individually adapted bays prevented efficient over-all operation of the system, made expansion almost impossible and resulted in a building poorly suited to the site. Studying all these schemes led to a decision to standardize space requirements for the Army and Navy to permit using one common bay spacing, which would produce substantial economies.

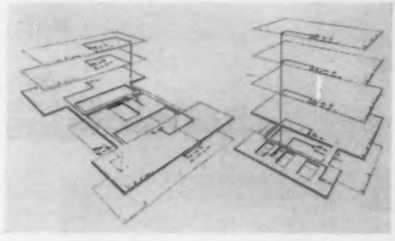
This was accomplished in the next phase of the process, that of comparing the various schemes after they had been developed, and studying their advantages and disadvantages jointly. Each team of architects which had been working on each of the nine schemes presented its findings as persuasively as possible, and each absorbed the work of the others. A report on this study phase was prepared and submitted to the Department. It was discussed in detail, and one scheme, or rather a combination of two, was selected as most promising. After an additional conference in Washington to alter the original directive to permit the type of building selected, the decision was made to proceed with development of the plans.

Relying on their detailed study and keeping constantly in mind the many inter-related factors of function, circulation and space, the architects worked out and submitted further refinements of the basic scheme. These were criticized in consultation with Department officials, and as a result of this collabora-

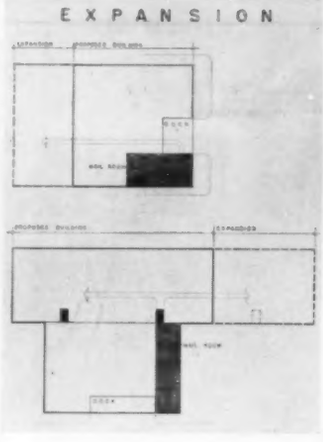


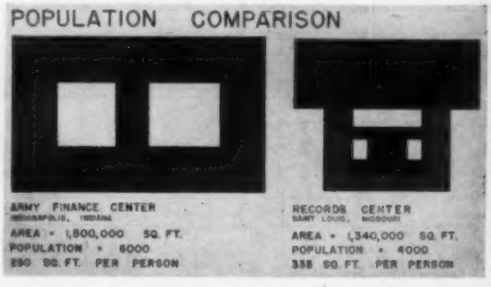


Eight weeks were required for diagrammatic and statistical studies preceding development of any of the nine preliminary schemes previously shown. Above, analyses of walking distances were among similar studies occupying the final refinement period; left, from average parked car to entrance; right, entrance to average office



Comparison of distances, left above, between square plan required by original directive and scheme of modified directive plan, was used to demonstrate advantages to Department officials. Right, vertical travel compared, schemes X and Y



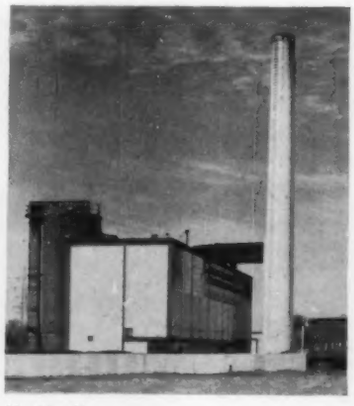


Left, comparative expansibility, directive and modified directive schemes; right, comparison, area per person, modified directive scheme and Army Finance Center

Entrance facade

Mac Mazuki

Boiler plant



Mac Mazuki

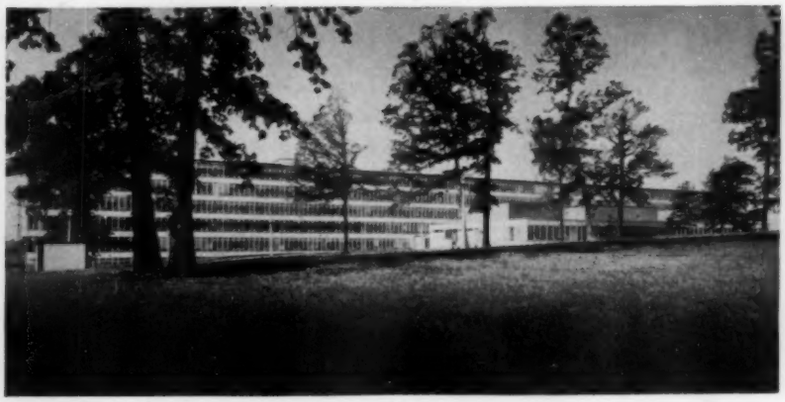
Ample parking

Mac Mazuki

© Ezra Stoller

The six-story building that was eventually constructed went up rapidly as a result of thorough programming and equally careful attention to all details during development of design and working drawings. The structure has a reinforced concrete frame and floors, concrete block exterior walls, aluminum windows

Adaptation to site

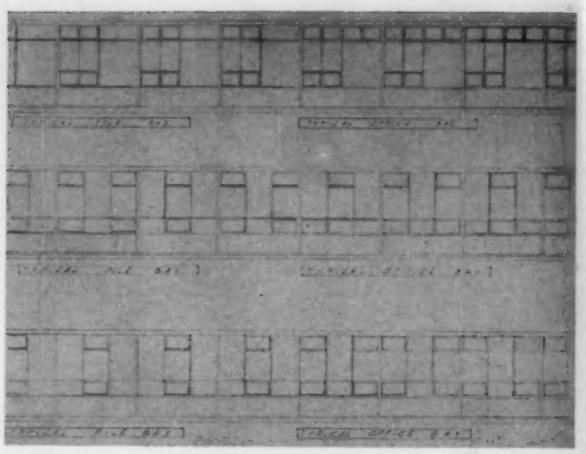


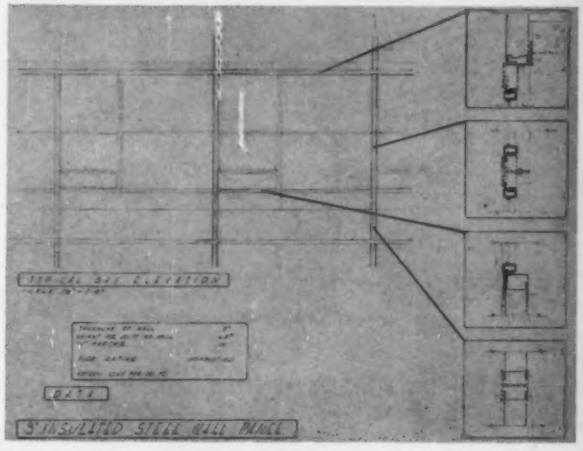
Corridors connect buildings

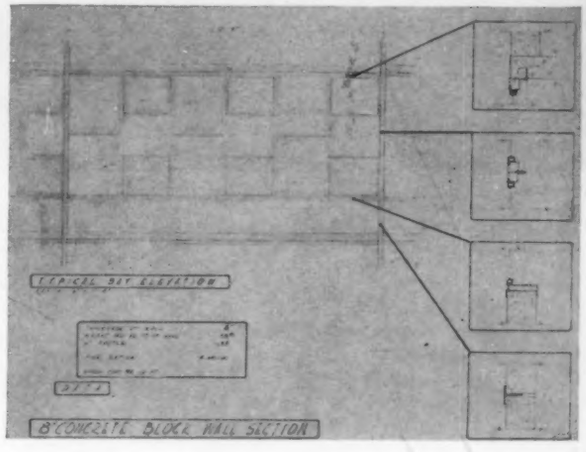
tion the final design emerged as a logical product of the needs of the using Services, the standards of the Department, and the goals of the architects.

The preliminary study had so organized the requirements as to make it possible to assign them priorities. The primary fact was that the relationship of the file and office areas was of the utmost importance, for the "working" of the files was seen as the most frequent, most central operation. All other functions could be ranged around this one and their relationships worked out to insure maximum efficiency. If the functional scheme itself is the heart of the job, no less important once that scheme is in hand is detailed design of every component of the building. It was natural for the architects who insisted upon such a thorough study of needs also to insist upon supervising each detail of design. Wall faces, doorways, window sash — all details for these came from the architects' drafting room where, again, the many possibilities were thoroughly canvassed to insure selection of those most consistent with the building's function and those most economical.

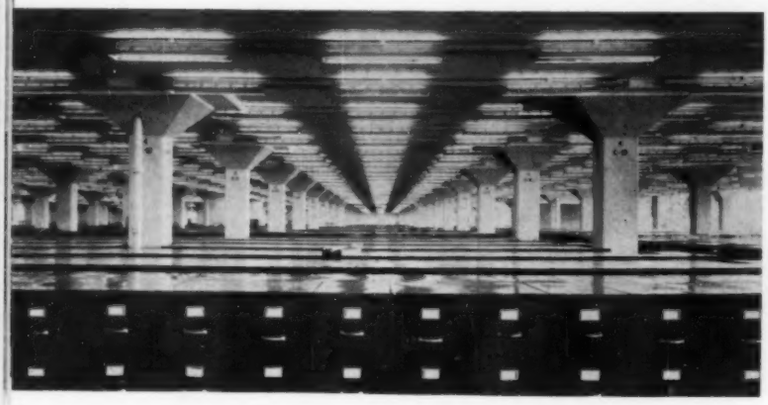
At the start of the project, Department of Defense officials gave the architects a budget figure of $19 million for the building itself. The final structure, including such additions (to what had initially been included) as increased air conditioning, was built for approximately $12½ million. This was not because the original budget was high — the Records Center is one of the 20 largest buildings in the world; it has 1,349,148 square feet of usable floor area; the Empire State Building has 2,690,383. The saving was due to the fact that the process described here resulted in a building which does the exact job required of it, and in which every aspect of the project is precisely related to its part in doing that job.







Of the number of fenestration studies made once the final scheme had been determined, only one (top right) is shown here. Similarly, wall materials studies were made in quantity, analyzing merits and shortcomings of several materials; insulated steel panels (discarded) and concrete block (accepted) studies are shown at right. Note continuous aluminum Tees which are both window mullions and controls for shrinkage of the block



Vast file areas are immediately accessible to appropriate clerical offices with minimum difficulty of "working" the files. The time-table for the programming and design work necessary to arrive at an optimum for this prime function of the building was:

1. *Study of Department directive, conferences & discussions of needs with Department officials . . 2 weeks*
2. *Research and study of other facilities, travel, etc. . . . . 4 weeks*
3. *Detailed preparation and study of survey — diagrammatic & statistical analyses . . . . . 8 weeks*
4. *Further conferences and discussions . . . . . 2 weeks*
5. *Development of nine different schemes by separate teams of architects . . . . . 3 weeks*
6. *Joint study of all schemes . . . . . 1 week*
7. *(After decision of final scheme) Development and refinement of final scheme, in consultation with Department officials . . . . . 15 weeks*
8. *Working drawings . . . 40 weeks*

The Records Center has about 1,340,000 sq ft of floor area. Flooring in offices is asphalt tile; in file areas, cement finish; in a few areas, terrazzo. Heating is low-pressure steam; the building is air conditioned. There are two freight elevators and one small passenger elevator; escalators to all floors handle most of the circulation. Windows are washed from a carriage suspended from the roof on rails. Eventually 4000 people are expected to work in the Center

Ample daylight

Wide corridors

Moving stairways

© Ezra Stoller

A BUILDING FOR BOWLING

FACILITIES FOR one of the country's fastest growing sports rarely enjoy the kind of site, programming, and design which produced this building.

As part of an overall recreation scheme for the planned town of Fairless Hills, Pennsylvania, the building was assigned a site which permitted its development as a free-standing structure. Further the program did not demand a building capable of convertibility to other uses. It did, however, ask for an environment which would promote family participation in bowling; reflect the steel manufacturing orientation of the community; and be easily maintained.

Spatially the public service and control areas including the spectator promenade open completely into

Joseph Molitor

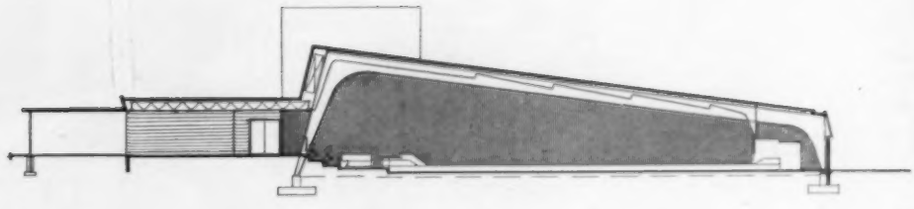
"Fairlanes," Fairless Hills, Pennsylvania

Tully and Hobbs and John R. Diehl, Architects

A. Ernest D'Ambly, Consulting Mechanical Engineers

Marion V. Packard, Landscape Architect

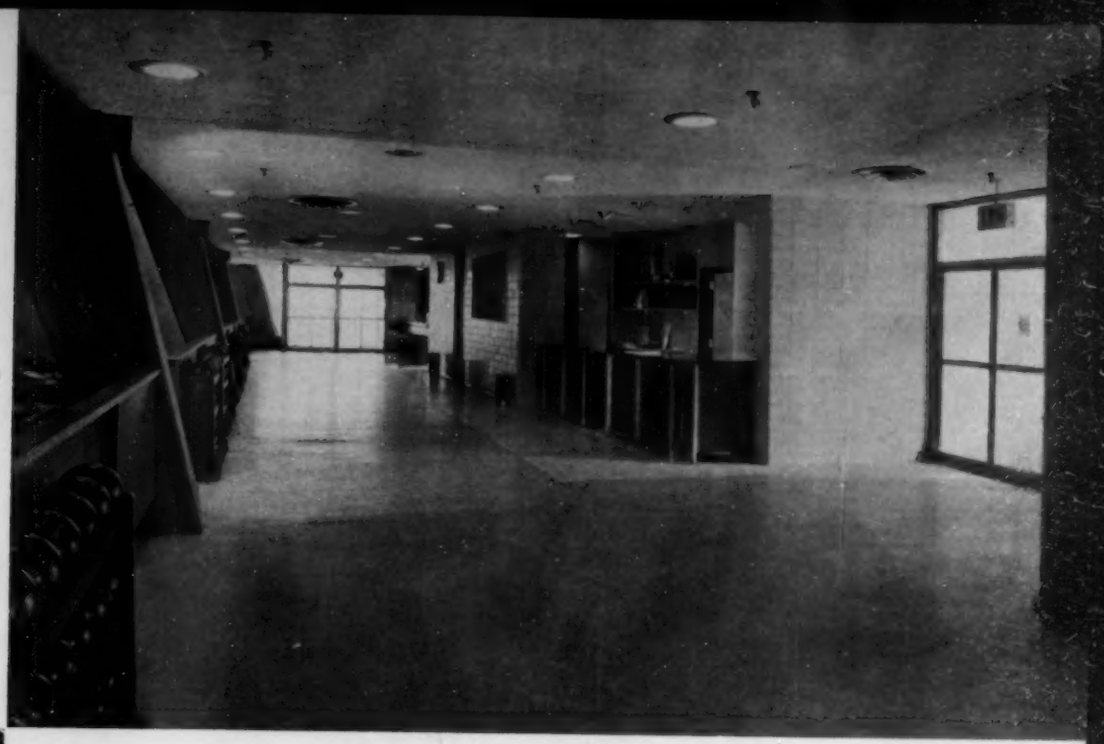
Turner Construction Co., General Contractor



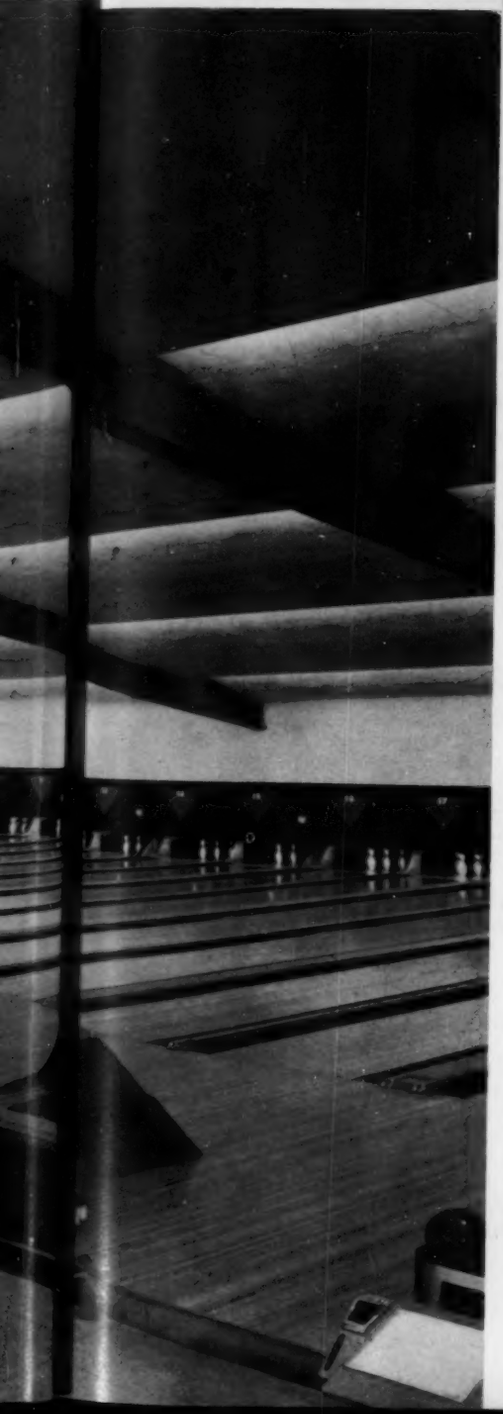
the bowling area where 24 alleys are 2 ft 6 in. lower. With human occupancy concentrated at one end the great roof has been carried down on four rigid steel frames of bright vermillion to a low ceiling at the rear, affording a change from the scale of men to the scale of bowling pins. Planes of acoustical plaster hide continuous fluorescent lighting strip and control the noise level throughout the bowling area.

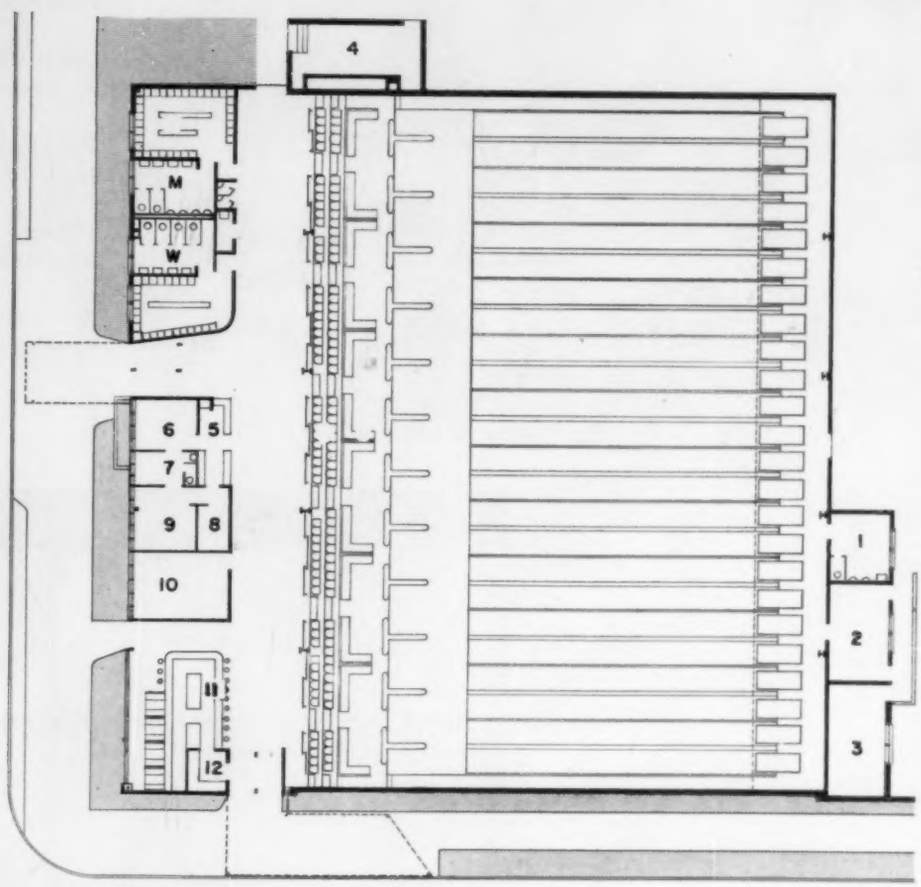
Heating, ventilating, cooling, electric and water service equipment are efficiently stacked in the 3-level mechanical tower.

Interior walls are ceramic glazed structural tile, grooved plywood; floors are terrazzo. Exterior walls are white brick and porcelain enameled metal.



Joseph Molitor





1 mechanics toilet
2 pin storage
3 pin refinishing
4 mechanical
5 control tower
6 manager
7 employees
8 coats
9 storage
10 conference
11 luncheonette
12 kitchen

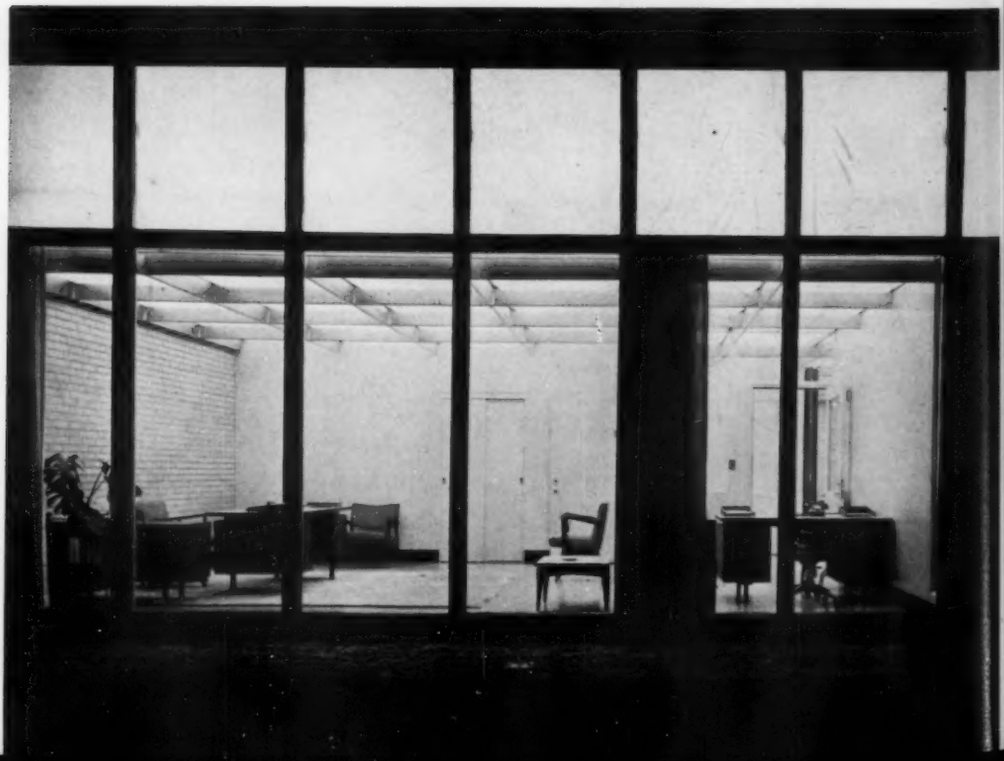
Addition to The Wakefield Co. Plant
Vermilion, Ohio

Outcalt-Guenther & Associates
Architects

Howard Bennett & Associates
Mechanical Engineers

Mehnert & Reid
Electrical Engineers

Elmer Hume, Inc.
General Contractor



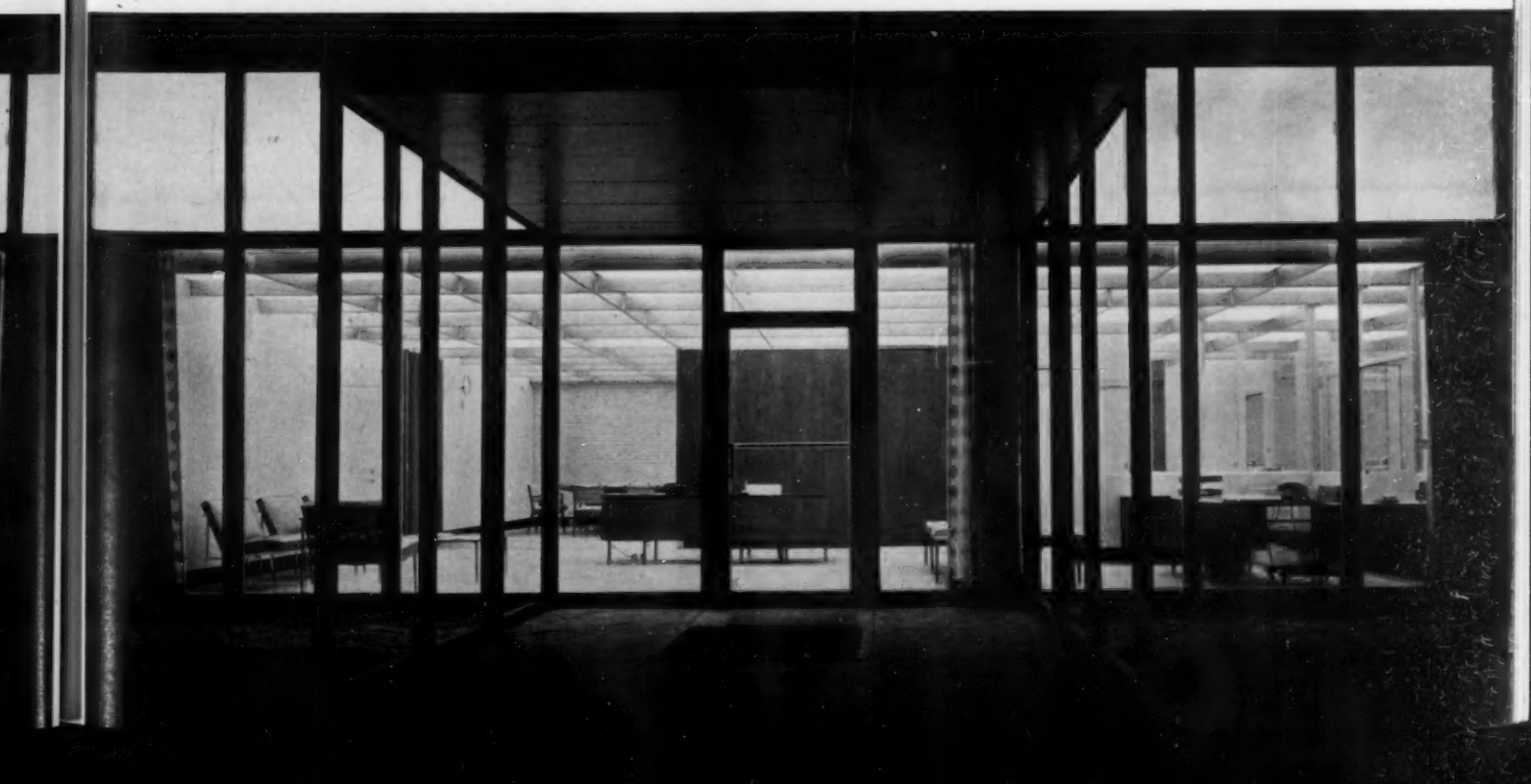
Photos courtesy GE Lamp Division

OFFICE-SHOWCASE FOR MANUFACTURER

IN ACCOMMODATING the expanding activities of this lighting equipment maker, the architectural problem was two-fold: first, to provide flexible office space; next, a full size, in-service demonstration of the modular ceiling-partition-wall system developed by the owner in conjunction with architect Saarinen and installed in the General Motors Technical Center. The suspended ceiling, now a standard product, is modular on a 4 ft. grid and incorporates lighting, sprinkler heads, air-conditioning diffusers, acoustical baffles, and channels to receive the tops of movable partitions.

The lobby — marked by the entrance canopy — divides the 40 by 120 ft. area into two parts: executive offices to the left; spaces for accounting, purchasing, filing, mailing, etc. to the right. A folding wood screen (see below) separates lobby and conference room. The rear (west) wall, of tan brick, is devoid of openings in order to screen out an unpleasant view, cut down excessive heat load, and demonstrate the effect of the lighting system in the absence of natural daylight.

The structure consists of tubular steel uprights and bar joists, spaced on the 4 ft. ceiling module.



INFORMAL LANDSCAPING KEYNOTES A NEW HOUSE

Residence for Mrs. Jackson Burke
Oyster Bay, Long Island, N. Y.

The Architects Collaborative
Architects and Landscape Architects

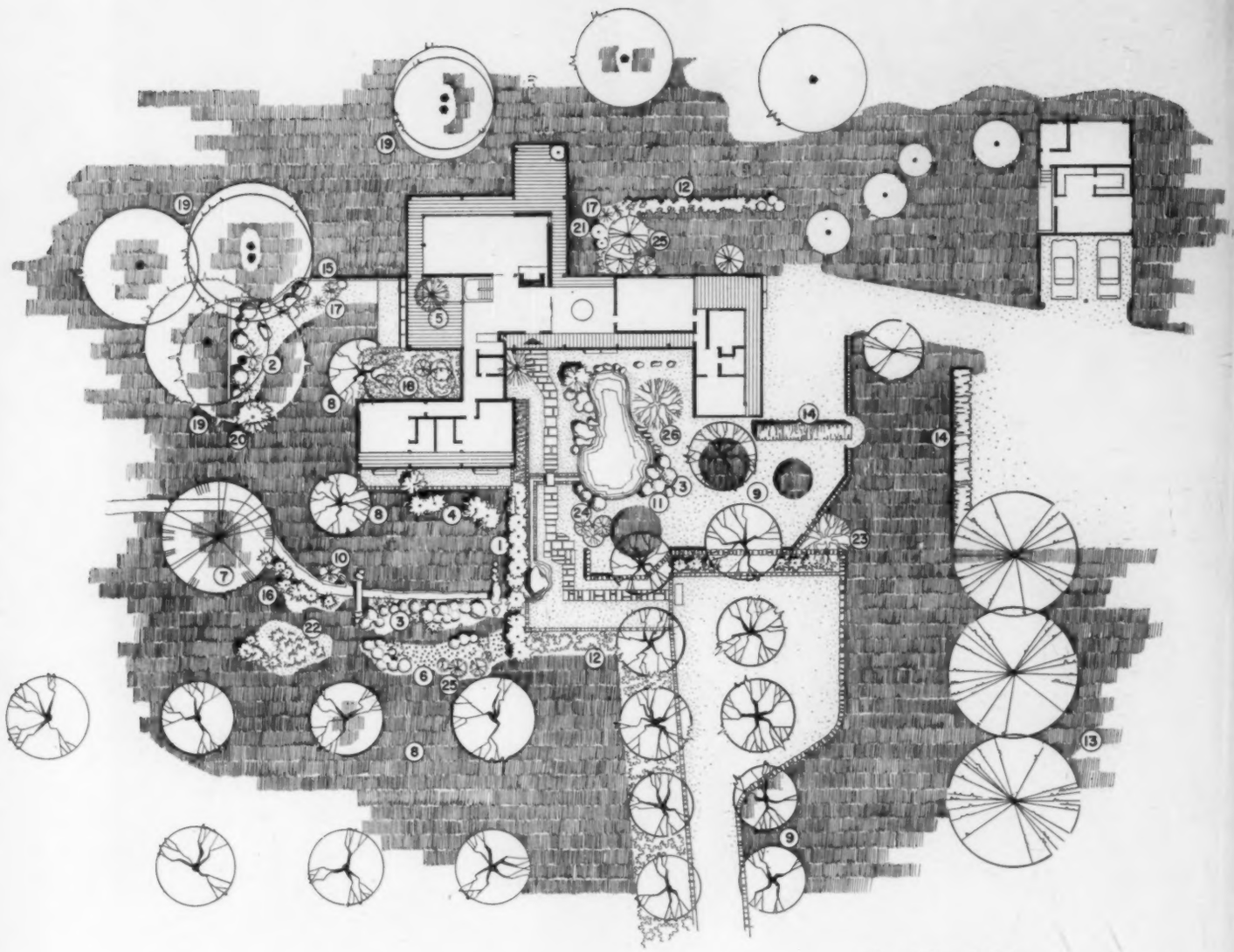
A BEAUTIFUL SITE with a distant view of Long Island Sound was an important factor in the design of this house. "We have sought," the architects explain, "to develop pleasant vistas from various vantage points in the house, and to emphasize the semi-enclosed courts created by the shape of the house by a series of informal gardens. This informal landscaping includes water as a focus for the entrance court, large hemlock hedges as space dividers, and large areas of gravel and lawn to define various functions." That they were successful is obvious: what more "pleasant vista" could one wish than the tranquil bedroom garden shown in the large photo at the right?

The house was originally designed for summer use only but was modified for year-round occupancy. Its three levels were planned (see pages 158 and 160)for entertaining without loss of privacy, and certain parts of the house —the master bedroom and study on the upper floor, for example — can be shut off completely if desired.

Construction is wood frame on a concrete block foundation. Exterior walls are largely red cedar T & G with a natural finish; interior walls are generally plaster board, painted. Furnishings are by Design Research, Inc., Cambridge, Mass.

All photos © Ezra Stoller

BURKE RESIDENCE

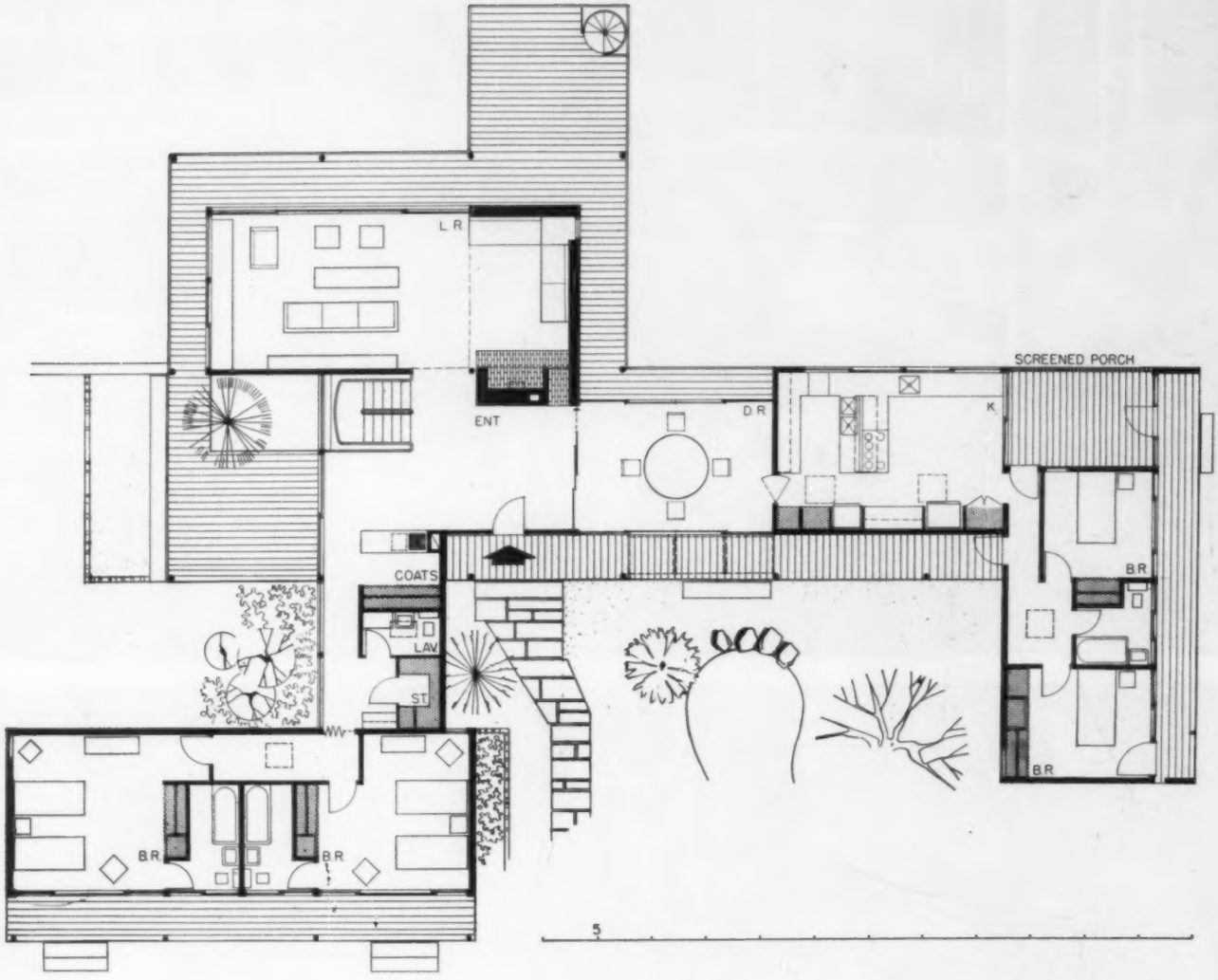


Drawn by Margaret Eskridge

KEY TO LANDSCAPE PLAN

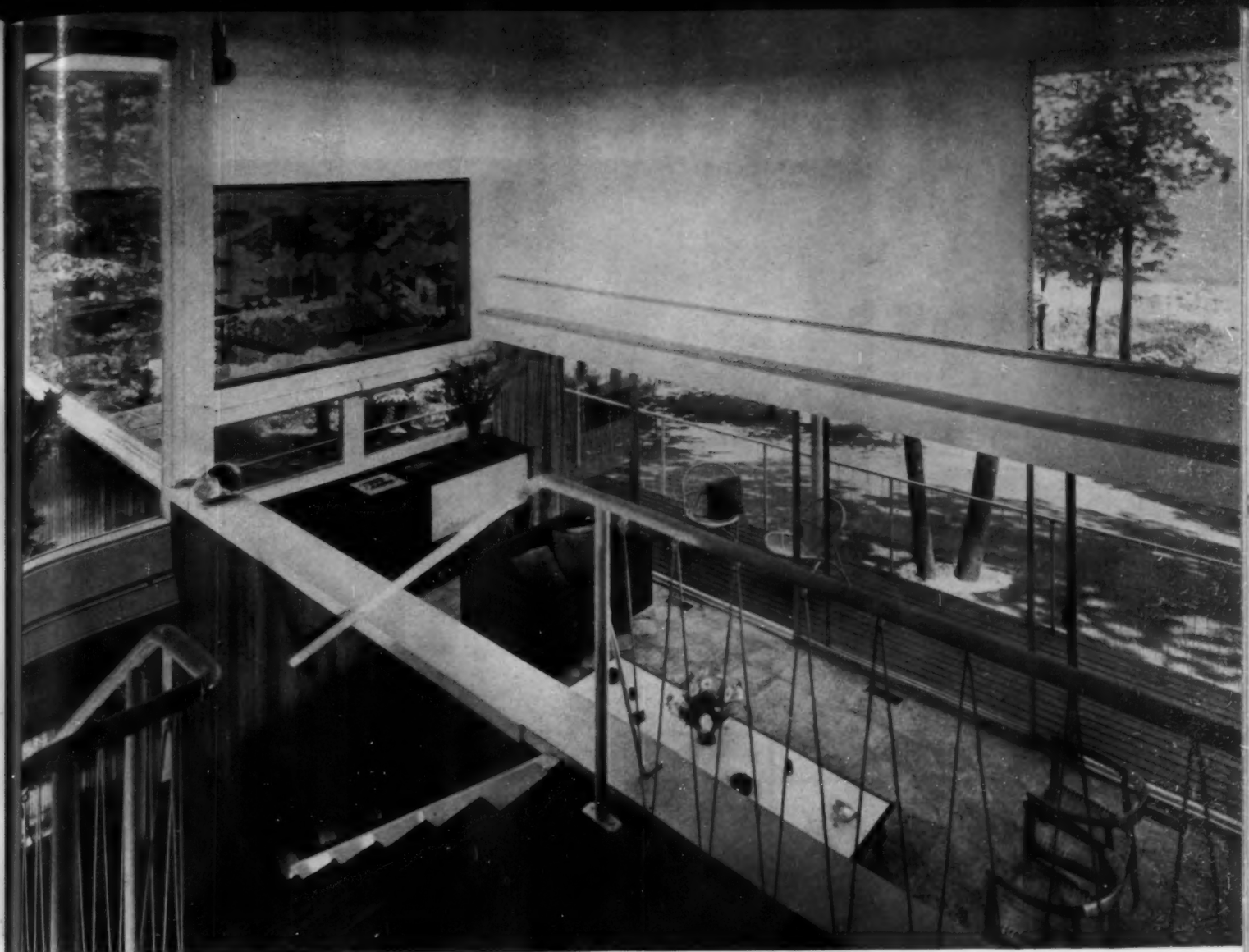
1. American Holly
2. Andromeda
3. Azaleas
4. Black Locust
5. Black Pine
6. Cat-O-Nine Tails
7. Copper Beech
8. Crab Apple
9. Dogwood
10. Dwarf Hemlock
11. Dwarf Pine
12. English Ivy
13. Hemlock
14. Hicks Yew
15. Inkberry
16. Juniper
17. Laurel
18. Pachysandra
19. Pin Oaks
20. Red Maple
21. Rhododendron
22. Roses
23. Weeping Cherry
24. White Birch
25. White Pine
26. Willow

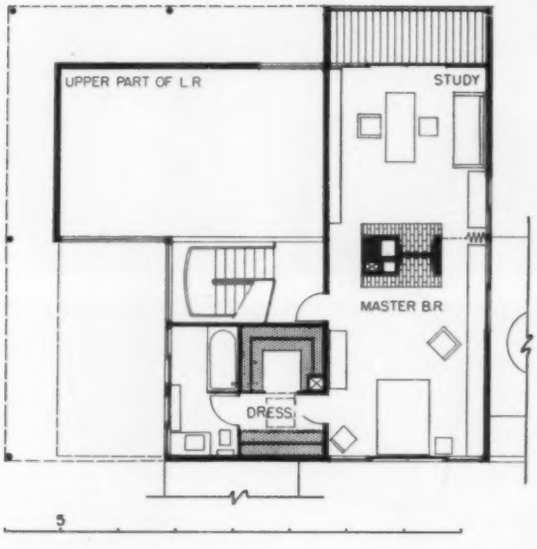
BURKE RESIDENCE



Main Floor

The unusual shape of this house, to which the architects call attention (see page 154), resulted in excellent circulation and zoning as well as the series of individual gardens or courts. Entrance hall, living and dining rooms, with their porches and gardens, form a spacious area for entertaining well away from the bedroom wing. At the opposite end of the house, not overlooking any of the main outdoor living areas, are two maids' rooms and bath, and a generous porch, part of it screened. There is a separate apartment for chauffeur or gardener behind the two-car garage to the rear of the lot. "Certain spots in the house have received a good deal of special detail," the architects write, "such as a secluded, dark-painted brick fireplace alcove in the living room, the large plexiglas dome lighting over the dining table giving a view of sky and trees, and a completely equipped TV-HiFi cabinet at one end of the living room. Flooring on this level is oak, covered with hemp squares; ceilings and walls are plaster board except for the brick fireplace alcove. High window in living room gives an interesting framed-picture effect from stair landing





Upper Floor

The upper floor contains, in addition to the owner's study and bedroom, a large storage area. The study, above, has good bookshelf space and a balcony. Bedroom shown below is not the owner's but one of the two on the main level, very similar in character. The lower level, not shown either in plan or pictorially in these pages, has a large playroom and bath as well as heater and storage rooms; floors there are concrete slab. The house was completed in the fall of 1955; contractors were Rossworm-Pellation Inc. and Charles Mullon and Co., Inc.

STRUCTURAL COMPONENTS FOR SCHOOL BUILDINGS

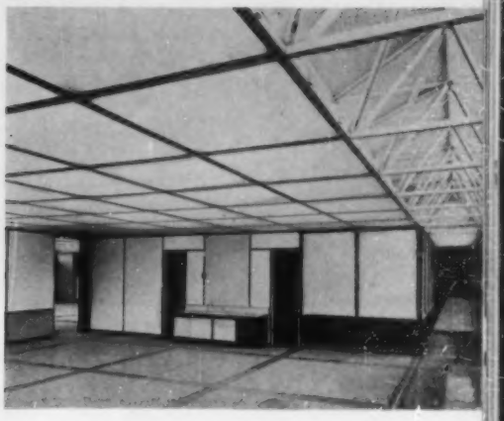
Structural elements large in size, precision manufactured away from the site, offer the advantages of mass production without the restrictions imposed by prefabrication of complete rooms or buildings

Last February, ARCHITECTURAL RECORD published an article on American and British versions of prefabrication and proprietary designs for school buildings. The conclusion then drawn was that use of any predesigned building would necessarily impose, on a particular situation and condition for which a school was to be built, an arbitrary solution, a Procrustean bed of a building; and value for value it was evident that some — though not all — such American examples were, to be blunt, barely able to give a school board its money's worth. The statement was also made that American architects neither feared nor forswore the principles or the objectives of mass production of school building materials; that they would in fact welcome any rational system which, while attaining the advantages of assembly line manufacturing (uniformity, precision, high quality, superior finish, ease of installation, etc.) would at the same time afford the designer liberty to create buildings that would exactly fit the particularities of each situation — including reasonable cost.

It did not take very long to substantiate that statement. The illustrations on this and subsequent pages are only a small portion of the evidence. Building materials manufacturers everywhere are producing the elements of such systems, in the form of structural components quite large in dimension. One might call these "sub-assemblies," these standardized, repetitive, generally accepted elements, ranging from structural framing systems with interchangeable parts available in a variety of sizes and strengths, to wall panels, entire room walls, roof and floor units, and even to some radically experimental developments.

In them are reflected the demands that architects have made as a result of their analyses of building requirements. These are surprisingly uniform in essence, though in form the demands may take on a local or regional complexion. They boil down to such familiar phrases as the need for flexibility; reduction of on-site labor; quality along with low first cost and low maintenance charges; making a single item accomplish several ends at once; general availability; acceptability to local labor and clients; guarantees; and so on. Some of the examples are evidence of direct interaction between the architectural profession and the business of manufacturing — for instance, the Unistrut system, whose manufacturer is also an architect; or the

1

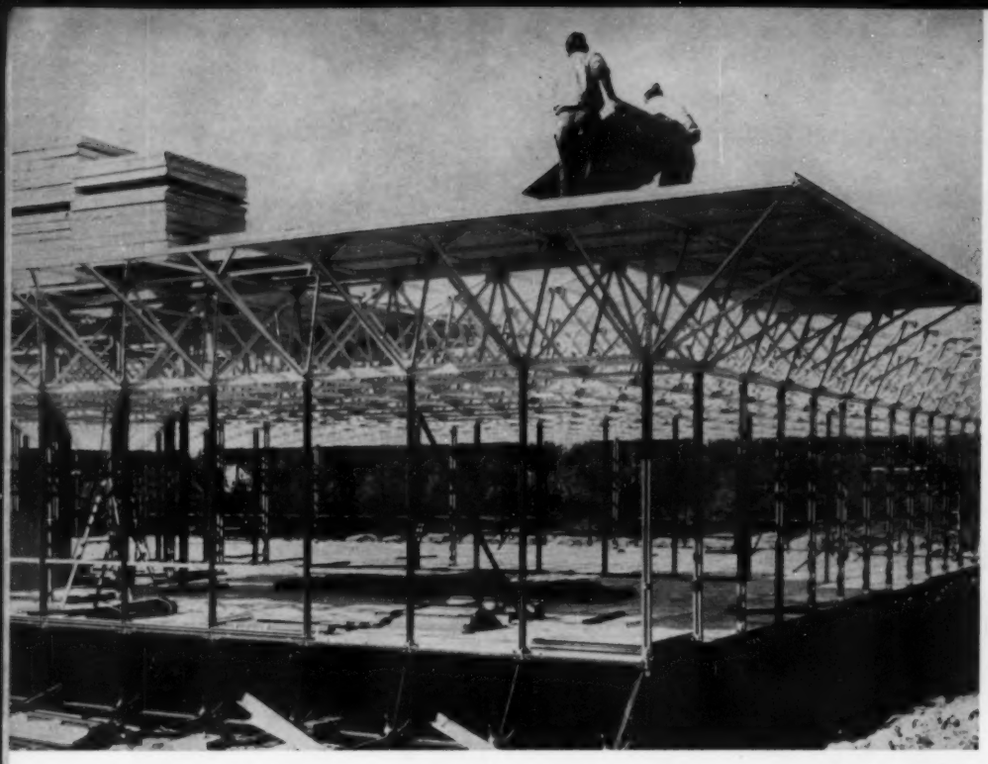


2

3

1, *Macomber's standardized framing elements with simplified connections, West Cedar Elementary School, Waverly, Iowa; Perkins & Will, Architects.* **2,** *Universal space-frame structure, school in Wayne, Mich.; Sun Chien Hsiao, designer; Charles W. Attwood, Architect and Manufacturer.* **3,** *Wood post-and-beam structure, preformed roof planking, Cedar Heights Grade School, Cedar Falls, Iowa; Thorson, Thorson & Madson, Architects (R. R. Blanch photo).* **4,** *Arches and thin shells for large, unobstructed areas, Union Station Junior High School, Napa, Calif.; Corlett & Spachman, Architects (P. Palmer photo)*

4



5: *Space-frame*

5, *Hoover School, Wayne, Mich., completed in about 3 months at low cost without sacrificing quality, is a demountable Unistrut space-frame structure, can be enlarged or disassembled and moved.* **6, 7,** *San Jacinto Elementary School, Liberty, Tex. (Caudill-Rowlett-Scott & Assoc., Archts.; Meisel photos), employs standard structural steel shapes in limited number of sizes and with standardized connections, savings were substantial; relatively small bay size meant smaller steel sections, required careful planning around columns to prevent interference with room function.* **8,** *Versatile wood framing can easily combine with other materials; appropriate modules are also suitable for repetitive window-wall units.* **9,** *Modules (this example devised by Ronald Senseman, A.I.A.) can be developed in three-dimensional form to meet requirements of structural frame, wall assemblies, roofing materials, pre-built casework, and room sizes.* **10, 11,** *Concrete frame accommodates large window assemblies, repetitive concrete pan floor and roof units (West Miami Jr. High School, Miami, Fla.; W. H. Merriam, Archt.; Wm. Amick, photos).* **12, 13, 14,** *Waverly, Iowa School illustrates adaptability of standard Macomber structural elements, only a few of which are here employed*

experimental aluminum roof in Tucson that was developed by architects and engineers in collaboration with Reynolds Metals; or the varied uses of porcelain enamel displayed in the West Hartford school.

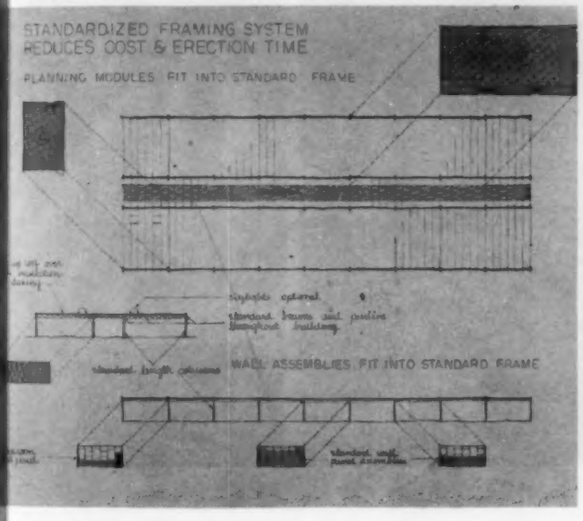
Some of these examples are experimental, but most are standard products widely available on the open market. Only a few even approach being "new"; most have been available for some time. That means they have been sold in large enough quantities to be profitable, or potentially so, or they would have been discontinued or replaced by better products. Yet there are enough new materials — again, the illustrations are only a sampling — to indicate how important to industry, architects and their clients is the continuing search for improved materials and techniques.

Of the framing materials available today Macomber's "V-Lok" system, a range of standardized columns, joists and trusses with simple lock-joints, and including every necessary item, bearing plates and the like, and Unistrut's "space frame" system are both excellent instances of the new developments. Unistrut has a long history which seems about to produce tangible results. The Michigan school shown, occupied this past school year, was erected quickly despite its unfamiliarity. The result of the efforts of many individuals, it requires only a reasonably level excavation because its lower members rest on jacks set on bearing plates and exact leveling is easy to accomplish; the uniform tension members that make up its alternated tetrahedrons are secured to uniform connector plates with bolts drawn tight by power wrenches. In both "V-Lok" and Unistrut, the simplicity of the joints is an important, striking feature.

While this article is not primarily concerned with mechanical or electrical systems, it is true that we can no longer afford merely to design a shell of a building and then drop some heating equipment into it. That procedure, which used to be common, is today too expensive. We have come to expect materials to do double or triple duty. Hence the concern with a roof slab's insulating and acoustical properties, and hence too in part, the continued use of some time-honored materials. In certain situations one cannot find a material superior to concrete block or glazed structural tile or, often, brick; other like examples are easy to name. But such factors as weight or mass, precision, quality control and simplicity of assembly are more carefully pondered today than they were a few years ago, because it has been proved to many people many times that excess weight, lack of precision or of quality, and complexity of construction

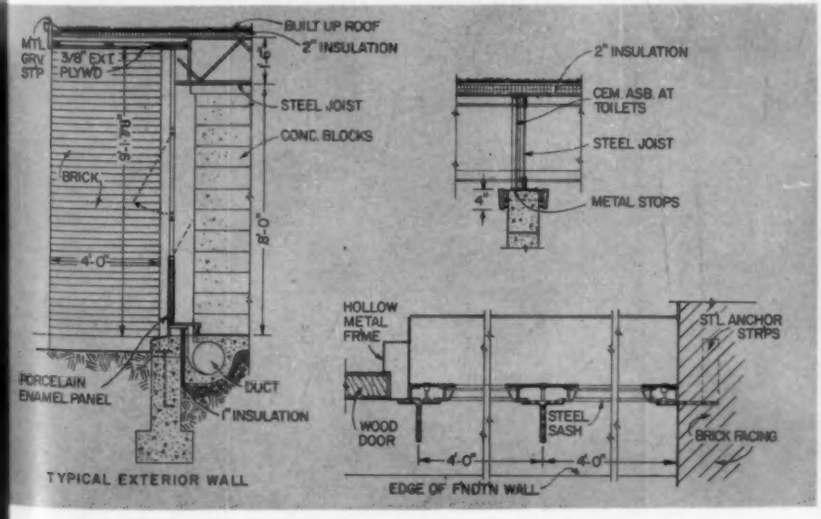
6, 7: *Modular structural steel framing*

8: *Wood and steel*


STANDARDIZED FRAMING SYSTEM
REDUCES COST & ERECTION TIME
PLANNING MODULES FIT INTO STANDARD FRAME
WALL ASSEMBLIES FIT INTO STANDARD FRAME

9: *Development of a module*

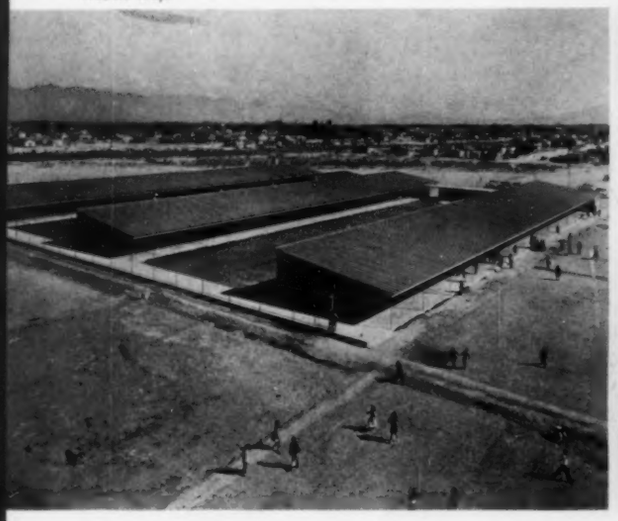
10, 11: *Reinforced concrete*

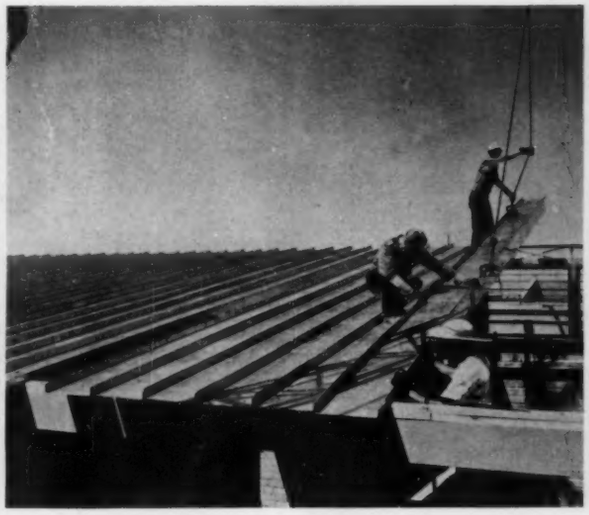


12, 13, 14: *Lightweight steel bar joists, columns, roof decking*

15, 16, 17, 18: *Various applications, Fenestra steel roof decking; structure plus acoustical purposes*

Western Ways





Western Ways

19, 20, 21: *Hollow decking of heavy-gauge aluminum; structure plus solar heating and reflective insulation*

Joseph W. Molitor

22: *Concrete, lift-slab method*

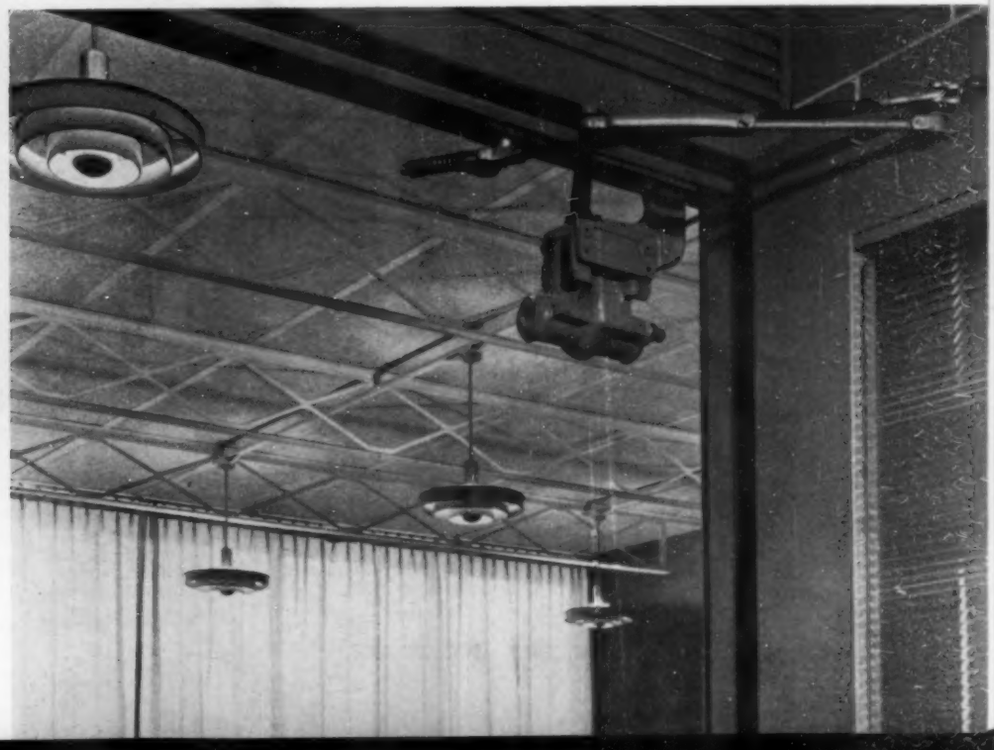
23: *Concrete, Rapidex lightweight preformed slabs*

are all exceedingly expensive. There is seldom enough money for school building construction, and so these factors have a special importance here. The relatively low rise in school construction cost in comparison to that of other types of buildings demonstrates just how much attention such factors have received.

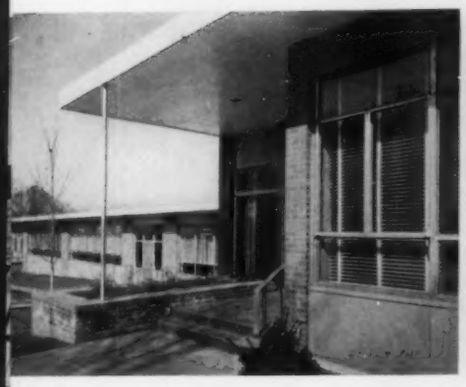
On the other hand, mass alone is a guarantee of many things: of durability, or low maintenance; of strength; of imperviousness to the passage of heat and cold and sound. So in our search for ways to lighten and simplify school structures we begin to defeat our ends, for the prime purpose of shelter is shelter, protection from these elements whose passage mass itself prohibits. Consequently we are building into our structures increasing quantities of mechanical and electrical equipment, adding to them acoustical materials as substitutes for the mass we have subtracted from them. In a way our progress is almost circular, like the route of a dog chasing his tail. There are at least three important practical differences, however: we are today producing educational buildings that function differently than schools did a century ago; our present structures provide a better educational environment than they used to;

15, 16, *light cellular steel decking resting on bottom flanges of beams gives flush acoustic ceilings; cant strips and roofing carried over upper flanges (schools in Missouri; Glen Drew, Archt.)* **17,** *same decking on top of rigid steel framing (Window Rock Indian School, Arizona; E. L. Varney, Archt.)* **18,** *same decking on bearing walls and conventional steel framing (High School, Seymour Wis.; L. Monberg & Assoc., Archts.) All examples take full advantage of acoustic properties of the perforated, sound-absorbent-backed decking.* **19, 20, 21,** *Rose School, Tucson, Ariz., has roofs of heavy-gauge aluminum in cellular structural units to take advantage of Tucson's clear sunny days; sun-heated air within cellular units is drawn off at ridge to heat classrooms, returned at eaves; reflective properties and air motion prevent too much heat from being re-radiated into rooms by the ceiling (Arthur T. Brown, Archt.)* **22,** *lift-slab concrete roof, Wilbert Snow School, Middletown, Conn. (see AR July 1956) has lighting troffers cast in as slab is poured (Warren Ashley, Archt.)* **23,** *lightweight slabs 10 or 12 in. wide, 6 or 8 in. deep, preformed to required length of small units with post-tensioned reinforcing; at present often used in Midwest schools, probably to become available generally as franchises are licensed.* **24,** *wood fiber decking, structural, insulating and acoustically absorbent, supported on tees and steel framing in North Carolina school (R. H. Longstreet, Archt.) and* **25,** *in Ohio high school (Joseph A. Baker & Assoc., Archts.)*

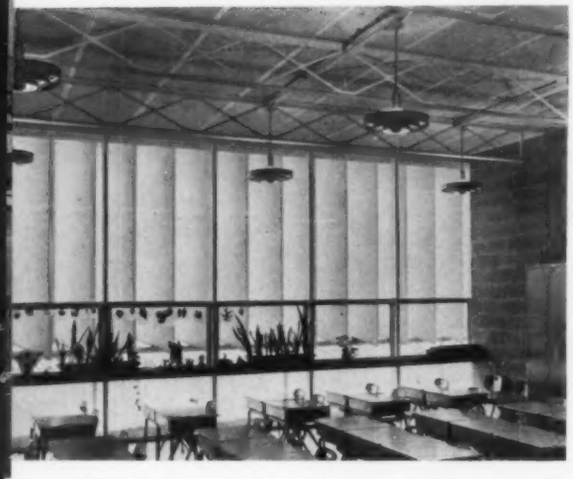
Fred E. Pickens



24, 25: *Tectum wood-fiber roof decking*



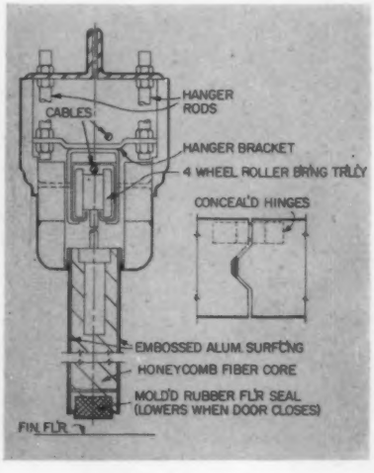
26, 27: *Porcelain enamel wall panels, fascias, acoustic (perforated) and plain interior surfaces, sculpture, light fixtures*



28: *Metal sash, metal brise-soleil outside glass wall*

26, 27, *porcelain enamel used in many ways, including plywood-backed spandrels and easy-to-maintain covers for truss members (Whiting Lane Elem. School, W. Hartford, Conn; Moore & Salsbury, Archts.; see AR July 1956; Molitor photos) among many pioneer developments of Boettinger Corp.* **28,** *Hope's steel sash, long a standard product, plus multiple exterior louvers of ⅛ in. steel plate for sun control (Benjamin Franklin High School, Newark, Ohio; Jos. A. Baker, Archt.)* **29,** *drapes are used in most classrooms of Whiting Lane Elem. School to separate areas.* **30,** *honeycomb core, aluminum surfaces, rubber seals, contribute to acoustic and insulating properties of Schieber-Haws folding partitions.*

Joseph W. Molitor



29: *Instead of fixed partitions, curtains; and* **30:** *honey-comb-core folding panels*

and we build them at the cost of less physical labor, which is the most expensive component of all.

As the trend toward transferring production of building units from the site to the factory increases — the signs indicate that it will grow — some other factors come to have great importance. One of these is the need for manufacturers and architects to agree as groups and among themselves on fundamental dimensional standards. Otherwise not only will architects have insuperable difficulties in getting bids on comparable products (competitive bidding seems secure as a means of keeping costs in line) but also, it will be impossible to make related but non-competitive products (panels and framing, for example) fit together without waste; in either case, the reputations of all concerned are bound to suffer. The more precisely a panel is manufactured to a dimension, the more exactly must doors, windows and structural supports be sized and aligned when erected. One of the virtues of plaster is its ability to smooth out the inequalities of structure, to cover up the deficiencies of labor.

Quite a fancy name has been given to one means of making sure that things fit together simply with little waste: modular coordination. Unfortunately this simple concept has many ramifications, and some have been scared by them. Whatever the effort, however, modular coordination, or making things to fit, or whatever one chooses to call the idea, appears to be essential if the mass production of large-sized components for school buildings is to succeed as completely as one could wish. Look back over the illustrations in this article, and see if the concept is absent from any. Many are obviously modular; in some the modularity is less evident. And many of the modules are quite different from one another. That isn't incorrect, either, as long as there exists a common denominator. The planning module can easily be a large unit, 4 or 8 or 12 ft on a side, say; or larger in one dimension than another; provided it accommodates the modules to which are made the materials that will go into its building. The essence of building construction, a prime ingredient of building design, is knowing how to make things fit. Modularly dimensioned structural components help both the architect and the builder. Non-modular components hamper them both.

Courtesy of Bertha Schaefer Gallery, Walter Rosenblum, photographer

WALLS AND PANELS BY HUGH WILEY

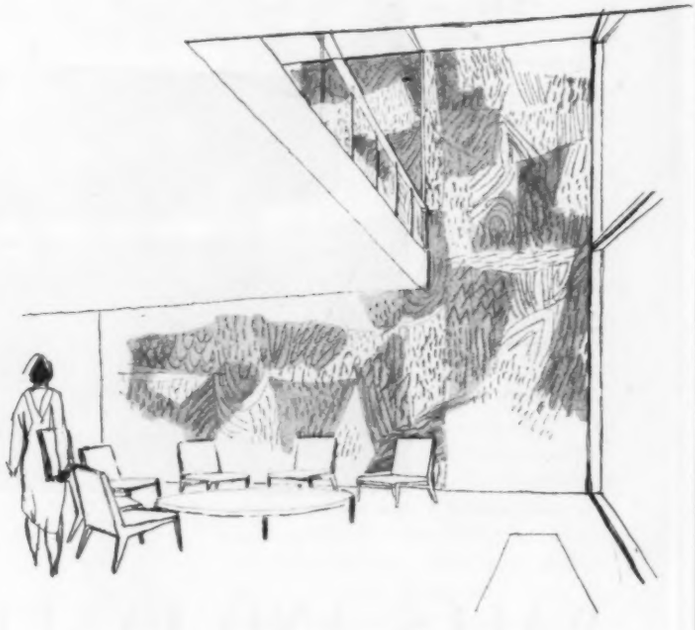
Courtesy of Betty Schaefer Gallery. Walter Kuehnum photographer

Panel group 9 ft high and 6 ft deep for meditation room in religious building. Gold, white and black paint, textured Swedish putty

Mosaic and silicate mural on textured cement . . . .

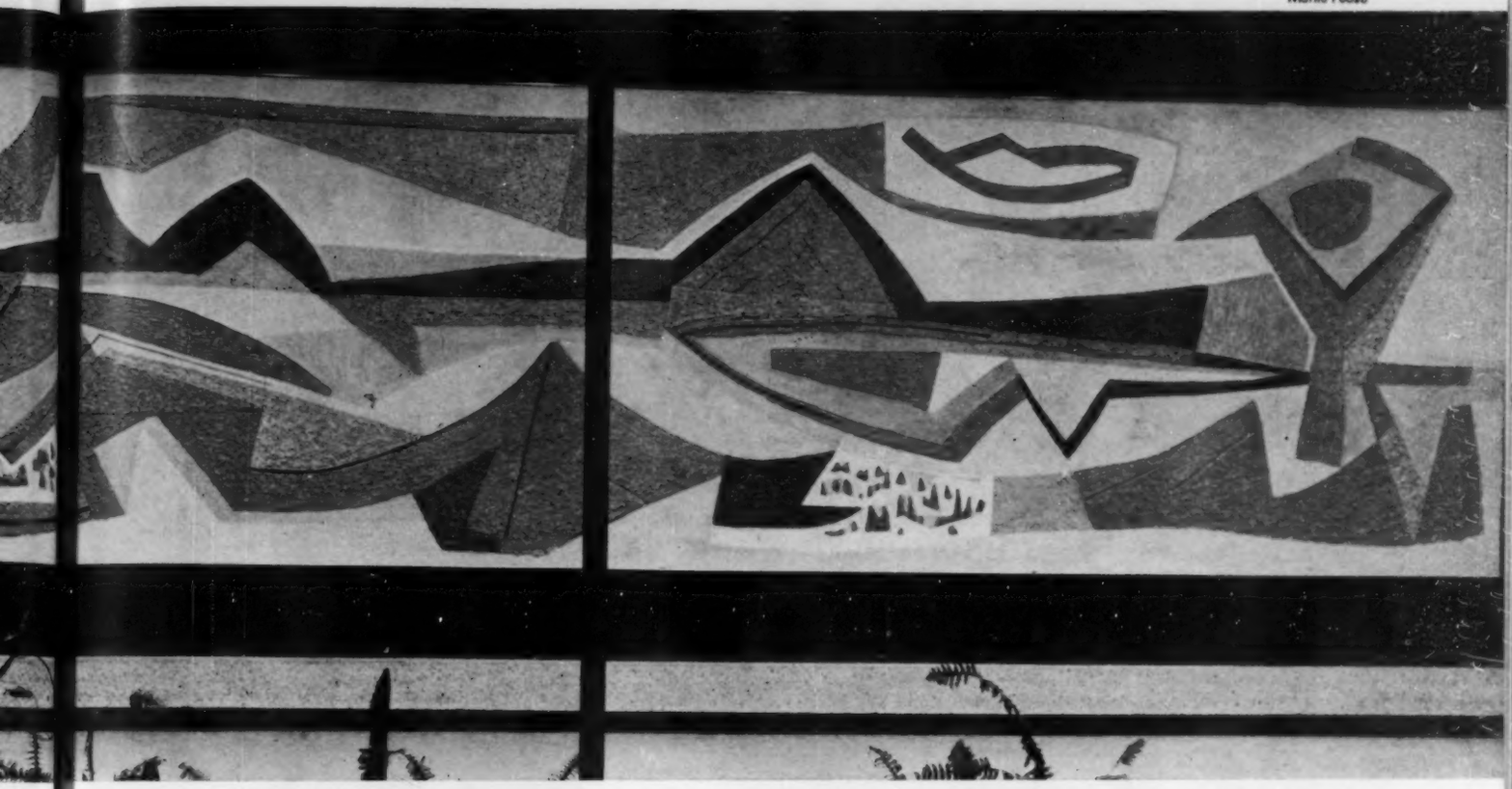
Black, gray, brown and blue right-angled wall in Washington, D.C. house. Swedish putty with mosaics and brass rods. 10 ft by 22 ft

Detail of brass strips outlining areas in mural



Cement and mosaic wall mural, 20 ft by 19 ft, for entrance of proposed North Queens Medical Group Center, New York; Abraham Geller, architect. Red, orange and blue

Marilu Pease



. . . . *in entrance lobby of a Mexico City office building; architect, Juan Robles-Gil. Colors are black, browns, ochres. 7½ ft by 36 ft*

MOSAICS AND MURALS are undergoing experimentation. Now designed in varying techniques, and with new materials, they are re-appearing as original and sympathetic allied art forms in architecture. The flat wall mural is giving way to a three dimensional one, and more possibilities are opening for the muralist and architect with the advent of the non-load-bearing wall. Free-standing panels can be planned by artist and architect in such a way that paintings can truly become part of the total structure.

The work of mural painter Hugh Wiley is an example of this trend, as he does not merely color the walls he works on. Using textured mosaics, cement and silicate mediums, Wiley has developed a personal approach that is striking in design and execution, and unusually luminous in color. According to the individual architectural problem he uses flat wall surfaces, adjoining corner walls or entire mural panels. Always probing for new ways of expression he now hopes to execute screen walls, or a series of panels, that would allow the spectator to "enter" the enclosed space of the painting. He prefers to cooperate fully with the architect from the beginning of the project.

To achieve this end Wiley utilizes materials for what they can offer in contrasting textures — for texture is of primary importance to him in creating a spatial concept. In the large abstract shapes and forms he has derived from nature, some areas shine and sparkle with mosaics. Other parts are rough-surfaced painted masses, often defined by brass strips (see below left). He feels that a mural should never be considered static, but should be a moving, flowing thing, as in the example above, done for an office building by architect Juan Robles-Gil. In this horizontally planned mural, movement and space are achieved not only with texture, but with changing, powerful forms from Mexican landscape.

Ever since his student days at the Pennsylvania Academy of Fine Arts, Indiana born Hugh Wiley has been interested in murals. On a Cresson traveling scholarship he went to Mexico City, saw the projects being done, and later returned in 1950 to study and work for three years. As can be seen in the examples of his work

Marilu Pease

Mural wall in passage way of house by Juan Robles-Gil. Ochres and two shades of deep gray. 7½ ft by 14 ft

Marilu Pease

Double fireplace with mural dividing living room of Robles-Gil house. Rough-textured surface of silicate on cement in rose-beige, gold, off-whites and brown tones

Exterior carport mural for house in Beach Haven, New Jersey; Abraham Geller, architect. Textured, painted cement in pinks, browns and ochres. 7½ ft by 26 ft

in Mexico, he adopted the abstract patterns of the mountains and desert plants. Even now his murals have a lingering feeling of the dramatic Mexican countryside and its warm earthy colors.

One of Wiley's first commissions on returning to the United States in 1953 was an exterior wall mural running the length of the carport of a beach house designed by Abraham Geller. The pinks, browns and ochres of the mural are punctuated with an occasional bold black shape — all moving in a vibrant, defined manner across the surface. Wiley is now living near New York City and is again working with architect Geller. In a looser and more plastic technique, he is doing a wall mural two stories high for the entrance of a proposed group medical clinic (see sketch on preceding page). The mural, intended to be a symbol of the cooperative spirit in the clinic, is predominately red and orange with a large, leafy tree-form in varying shades of blue rising in the center. Another project — a long pool — will meander through a shopping and civic center on Long Island. This shallow pool with arms reaching out in different directions will be designed with violet, green and blue mosaics.

In these many ways Hugh Wiley demonstrates that the conception of a mural should be a part of architectural space, and should grow and change with the planning of the building. As he is constantly searching for new means of expressing a need, he has recently done wall panel studies such as the small one on page 167 and the full scale model for a meditation room on page 168. The small study, executed with oil paint and cement on brass and copper sheets, is an experiment for a series of wall panels. As free-standing walls these murals could take an even greater part in spatial definition: they would project and the forms would expand in three dimensions — literally a walk-in painting.

WAINWRIGHT BUILDING, St. Louis
Louis Sullivan
CARSON PIRIE SCOTT STORE, Chicago
Louis Sullivan
ROCKEFELLER CENTER BUILDINGS, New York
Reinhard & Hofmeister; Corbett, Harrison & MacMurray; Hood & Fouilhoux
LEVER HOUSE, New York
Skidmore, Owings & Merrill
TRINITY CHURCH, Boston
H. H. Richardson
PHILADELPHIA SAVINGS FUND SOCIETY BUILDING, Philadelphia
Howe & Lescaze
GENERAL MOTORS TECHNICAL CENTER, Detroit
Saarinen & Saarinen
LAKE SHORE DRIVE APARTMENTS, Chicago
Mies van der Rohe
S. C. JOHNSON & SON, INC., ADMIN. BLDG., Racine
Frank Lloyd Wright
MONADNOCK BLOCK, Chicago
Burnham & Root
DAILY NEWS BUILDING, New York
Hood & Howells
TVA NORRIS DAM & POWER HOUSE, Tennessee
Roland Wank, Architect-in-charge
BOSTON PUBLIC LIBRARY, Boston
McKim, Mead & White
STOCK PAVILION, Raleigh
Nowicki & Dotérich
CHRISTIAN SCIENCE CHURCH, Berkeley
Bernard Maybeck
WOOLWORTH BUILDING, New York
Cass Gilbert
CROW ISLAND SCHOOL, Illinois
Saarinen & Saarinen, with Perkins, Wheeler & Will
MANUFACTURERS TRUST BUILDING, New York
Skidmore, Owings & Merrill
UNITY CHURCH, Oak Park
Frank Lloyd Wright
NEBRASKA STATE CAPITOL, Lincoln
Bertram G. Goodhue
S. C. JOHNSON & SON, INC.; LABORATORY, Racine
Frank Lloyd Wright
UNITED NATIONS SECRETARIAT, New York
Wallace K. Harrison & Consultants
LINCOLN MEMORIAL, Washington
Henry Bacon
M.I.T. AUDITORIUM, Cambridge
Eero Saarinen
EQUITABLE BUILDING, Portland
Pietro Belluschi
ALLEGHENY COUNTY BUILDINGS, Pittsburgh
H. H. Richardson
UNIVERSITY CLUB, New York
McKim, Mead & White
CRANBROOK SCHOOLS, Michigan
Eliel Saarinen
MINERALS & METALS RESEARCH BLDG., I.I.T., Chicago
Mies van der Rohe
ALCOA BUILDING, Pittsburgh
Harrison & Abramovitz
MUSEUM OF MODERN ART, New York
Goodwin & Stone
PENNSYLVANIA STATION, New York
McKim, Mead & White
EXPERIMENTAL SCHOOL, Los Angeles
Richard Neutra
DODGE TRUCK PLANT, Detroit
Albert Kahn
100 MEMORIAL DRIVE APARTMENTS, Cambridge
Kennedy, Koch, DeMars, Rapson & Brown
CENTRAL LUTHERAN CHURCH, Portland
Pietro Belluschi

HOUSES

F. C. ROBIE, Chicago
Frank Lloyd Wright
E. J. KAUFMANN, Pennsylvania
Frank Lloyd Wright
TALIESIN WEST, Arizona
Frank Lloyd Wright
HENRY VILLARD, New York
McKim, Mead & White
WATTS SHERMAN, Newport
H. H. Richardson
AVERY COONLEY, Illinois
Frank Lloyd Wright
W. W. WILLITTS, Illinois
Frank Lloyd Wright
D. R. GAMBLE, Pasadena
Greene and Greene
PHILIP JOHNSON, New Canaan
Philip Johnson
WALKER GUEST HOUSE, Florida
Paul Rudolph
ELLEN SCRIPPS, La Jolla
Irving Gill
WESTON HAVENS, Berkeley
Harwell Hamilton Harris
LOVELL "HEALTH HOUSE", Los Angeles
Richard Neutra
EDITH FARNSWORTH, Chicago
Mies van der Rohe

3: APARTMENT HOUSES

ONLY TWO APARTMENT HOUSES (as compared with eleven office buildings) were nominated to the list of the fifty most significant buildings in the 100-year period which ARCHITECTURAL RECORD's panel of architects and scholars was asked to consider.

Both buildings were completed in this decade and both overlook magnificent waterscapes. Beyond this, and their basic programs, they have few points of similarity. The 100 Memorial Drive Apartments were designed by a team of architects whose principal stimuli were found, obviously, in the nature of people and the way in which they use buildings.

The Lake Shore Drive Apartments were designed by a single architect whose dominant source of stimuli has always been — and very evidently here — the generalized processes and materials of building itself.

Though widely different in intention, and in the situations provided, each of these buildings is a significant achievement.

Panel member John Burchard writes: "If posterity judges this aspect of modern aesthetics to have been an important one, it can hardly fail to assign preeminence to 860 Lake Shore Drive as the example par excellence of the attainment of a classic position. It is perfect in its proportions, serene in its stand. It states beyond contradiction that modern architecture has found functionalism not enough, for it denies functionalism both in the requirements it makes on living and in the admission as the new units will assert that to reveal a steel structure as being different from a concrete structure is not necessarily the highest aspiration of art. The questions 860 Lake Shore Drive asks are something like this: What more can be expected within this vocabulary? When will we learn to give such buildings their due by giving them a sufficiently complete setting, a question better worked out, if not better understood, in Rockefeller Center? How is a building so ordered to allow the individual tenant the freedoms he has a right to expect without the sacrifice of the overall dignity? This is of course a fundamental problem for society too but as yet at any rate our society will in such situations prefer individual chaos to communal order. Eight-sixty Lake Shore Drive reminds us again of this question. Its aesthetic brilliance transcends the expedient. It is a masterpiece then in more ways than one, and like a great piece of poetry has several levels of meaning."

Photographs on next two pages are Lake Shore Drive Apartments (Hedrich-Blessing), left, and 100 Memorial Drive Apartments (© Ezra Stoller), right

Hedrich-Blessing

Lake Shore Drive Apartments, Chicago, 1951, Mies van der Rohe. (Seventh)

"The Lake Shore Drive Apartments are significant as a successful esthetic spatial study of two multiple-story buildings on an American-sized square block. This includes the study of the ground level aspect and approaches to the site and the site itself. In addition this group is important as a concept of a thin outer wall construction (glass) on a steel frame embodying typical physical requirements. In some practical aspects the building has glaring faults, as many significant works of art do have. Within the limitations imposed by the law and other agencies necessary to its construction, these buildings represent an initial achievement of importance to architecture." ***George Fred Keck***

"I must frankly admit that I am not an unbiased person when expressing myself about Mr. Mies. I have admired him when hardly anyone knew him or wanted to do so. The Lake Shore Drive Towers appeared like the wonderful conclusion of a lifelong aspiring formation of ideas. It is a moral force which sets the Miesian production apart; it is not mere formal abstraction. Young, and growing older, I knew and know more and more, it is the man behind the work who is the true impact to be esteemed." ***Richard J. Neutra***

© Ezra Stoller

100 Memorial Drive Apartments, Cambridge, 1950, Kennedy, Koch, DeMars, Rapson & Brown. (Tied for twentieth)

"100 Memorial Drive sets a high standard of excellence from almost every point of view. It was designed for people to live in and appears to be delightfully habitable. The building takes full advantage of its site's major asset, view. With an ingenious plan, imaginative though simple handling of materials, mass, openings, etc., it becomes a well-integrated whole. It has also, I understand, been a successful venture for the client. This building is an asset to the community and a beautiful demonstration of good architecture. As is usually the case in a successful building, credit is due to the architects and to an enlightened and understanding client." ***Hugh Stubbins***

MULTI-FAMILY HOUSING

BUILDING TYPES STUDY NUMBER 237

COMMUNITIES FOR THE GOOD LIFE

By Clarence S. Stein *

THE GOOD LIFE! Never before have so many people had so much time to enjoy a good life. But with what feeble results! The trouble is that there are so many buildings and highways all jammed together that there is not space to enjoy our opportunities. The 20th century technological revolution makes possible — in fact, it demands — leisure for all. This is in complete contrast to the 19th century industrial revolution which glorified labor and crowded its slum dwellings tight around its temples of industry.

In the movie "A Nous la Liberte" Rene Clair foretold this change 25 years ago. He showed the schoolroom of the 19th century with children taught as though it were a religion — "One *must* work." Adults who loafed were jailed, while those who labored did so in jail-like factories. And then mechanization took command. Ultimately it produced without human aid. Man at last had realized his fondest ambition — freedom from drudgery. And what did the workers do with their permanent holiday? In "A Nous la Liberte" everyone went fishing or dancing. Rene Clair a quarter of a century ago wrote this as a fantastic wish — like Jules Verne's tales. And now it is being realized. For the first time in man's history there is leisure — an ever-increasing leisure for more and more people — here in America. And there is every prospect that it is going to increase immeasurably.

Never before has the world or its architects been faced with this problem. Leisure, yes; but it has been leisure of the selected few: Hadrian's Villa, Versailles, hunting enclosures, the Riviera. The architect — you and I — face the task of setting the stage for a completely new production.

Leisure occupations for all require above all SPACE, much open space, convenient open space, verdant space. And the whole landscape has been cluttered with crowded, unrelated disorder. We are hemmed in by dangerous, nerve-wracking motor-ways. Open green places are engulfed and destroyed as the obsolete city pattern rolls out. Much of the time we have gained by shorter working hours and longer weekends is squandered in tiresome, jerky journeys in search of open spaces. Fields and woods and wilderness grow constantly more distant, as more and more open countryside is bulldozed into dreary checkerboard monotony. No matter how many billions are spent on our new thoroughway program, it cannot keep up with the increasing problem of more people going further and further to find less and less space.

So before our highway engineers flood most of our landscape under a sea of pavement, we architects must develop a saner plan for using leisure. We must bring the peaceful quiet and the beauty and the sense of great openness into every part of all our communities, as near as possible to where people live and work. Just outside everyone's own private garden or balcony there must be spacious open commons; plentiful green places attractive for leisurely loafing in the sun, or under a great tree, with lots of room for children to play freely and safely near home. Above all we need flexible space that can be used for various purposes as the neighbors get new ideas of how to spend their spare time, together or by themselves. Not in just playing games or sitting around talking and thinking, but in constructive action such as building a little community workshop or a nursery.

A moderate sized well-designed area can give a sense of spaciousness and of mysterious distance just beyond the corner. This is apparent in the exquisite gardens in Soochow, China, and in those of Japan. Here in America in a quite different way Thomas Church is making much of little, as Marjorie Cautlie did for me at Radburn and elsewhere. For utility as well as beauty open spaces are the basic element of design. Chinese artists and philosophers have long recognized this. Twenty-five hundred years ago Loa-Tzu said, "Clay is moulded into a vessel; the utility of the vessel depends on the hollow interior." To permanently augment the value of houses, group them around an attractive empty space. Harmony and melody, essential to the good life, dwell in spaciousness, not in congestion. Great Chinese painters composed the empty areas so that they delighted the soul even more than the subject of their pictures. And so, we are coming to understand that the all embracing view is more essential to good living than the finest interior.

For peaceful living the open spaces on which all houses face must be insulated from the racket, the odors, the deathly danger of through traffic ways. Therefore

* *Paper presented by Mr. Stein at the annual dinner of the American Institute of Architects' recent convention in Los Angeles, when he was awarded the Institute's Gold Medal.*

they should be built into the center of the blocks, separated from the highways. At the same time the homes and other buildings that surround them must be directly accessible to motor machines.

This kind of practical modern planning is possible only if we completely eliminate the conventional street layout and build a framework and substance that grows out of our needs of both living a leisurely life and being in convenient touch with work places and stores. The heart and arterial system is the tranquil chain of parks toward which the buildings face and through which the local life of the community flows. The highways become servants, not masters, of the community life. The main streams of traffic flow as freely and steadily as on a parkway or throughway. Buildings and grounds open only on subordinate roads. All parking is off street parking.

This means that homes and other structures face in two directions at the same time, one toward peaceful green spaciousness, and the other toward roads and services. Thus there are two separate frameworks for the modern communities. One is for motors, the other for pedestrians. The one is gray, the other green. They fit together like the fingers of two hands, but they never overlap or interfere with each other's functions.

In the contemporary city the green openness will go far beyond the built-in-parks, flowing through and connecting the super-blocks. Not only will every building open on views of fine old trees or distant hills, but broad green belts will be close by for agriculture or forests, for great sport fields or hiking, boating, fishing, swimming, skating, or just for solitude in the peaceful valleys or the wilds.

This is the kind of beautiful and healthful city that can be built in various parts of the United States if we start from the ground up. When they are seen and lived in I am sure that those who remain in the archaic cities will insist that redevelopment must also start from the ground up; that is must also clear away all signs of the 19th century pattern. Thus we can build truly green modern cities on the sites of the old stony deserts. The regional cities which are destined to replace our mad metropolitan monstrosities will consist of a constellation of such moderate-sized communities set against a great green background of fields, forests and wilderness.

Such communities cannot be secured by the ordinary piece-meal process of city planning. A beautiful and livable urban environment cannot be boxed into cubby-holes bounded by fixed and dominating streets and lot lines. It must be created as an entity, embracing the site, the mass of buildings and their relation to each other and to the natural setting; in short, to all the visual surroundings.

You may say that this is not a problem of architecture, it is a question of securing adequate land and planning it for leisure-time use where it is needed. But the fact is, the two must go hand in hand, the design of building and outdoor spaces for the new life and the allocation of adequate and proper land where and when it is needed.

The architect must take the leadership in this job. For it *is* architecture, but architecture in a broader and ever-broadening field.

What we need is an architectural attack on problems much more comprehensive than the individual building. The architect must deal with the whole environment in which his building is an essential, harmonious part — and without which the architect's work is impotent. The community may merely be a small group of inter-dependent structures, it may — most likely will be — a neighborhood, an urban district, a whole town or city, or even a region.

The procedure of a community architect parallels the practice of realistic contemporary architectural offices. This is illustrated by the design of a high school, which has many community relations similar to those of a small community. These include a campus free of auto traffic, surrounded by inter-related buildings both for families or classes and for community assembly, recreation, work, dining, administration. Interiors open on out-door rooms and courts. There are even schools within schools just as there are communities within neighborhoods, neighborhoods within towns, towns within regional cities. In the creation of a community, as of a school, the effective architect actively participates in the whole process of development from conception to realization. In association with the municipal administrator he coordinates the functional, operational and physical requirements of the expert practitioners in many fields. This so that his design will properly relate, harmonize and translate them into a unified structural entity that will be thoroughly practical and pleasing. Thus a town is created that works efficiently, effectively, and economically from the beginning, as a setting for good living — good modern living.

The architect in the new and changing world must accept this broader field of architectural practice because only so can he protect the buildings he creates. Their appearance is dependent far more on their setting than on their mass or the design of their facades. Their usefulness is limited by surrounding structures — and even more by the movement of traffic in the streets. The most efficient steady flow of material through an industrial plant can be completely negated by blocked traffic outside its doors. The causes of the congestion, decay, blight that surround your work may have its roots in defective, obsolete arrangement of highways and structures many miles away. And so, if only for self-setting — and city — and region in which his contemporary building can play its modern role. But the primary reason why all of us must parallel our practice

as architects of buildings with the broader practice of community architecture is less selfish than this. It is because America's greatest peace need is modern cities — cities that really work, that bear a sane and constructive relation to living here and now.

Many such cities must be built here if America is to hold its leadership among modern progressive nations. The architectural profession must fill the same position in design of modern cities as it has in design of buildings. It is a duty — but a very pleasant one — a field for adventure, exploration, discovery — glorious attainments.

Note that I suggest COMMUNITY ARCHITECTURE, not CITY PLANNING, as a fitting, an essential practice for our profession. The two fields are basically different.

City planning deals with two-dimensional diagramming, with a city's framework for circulation, and its subdivision into block and lots. Its specifications are negative regulations and generalized limitations, such as zoning. They are not positive, specific, constructive requirements as those for a particular building. Thus the detailed form and mass of a city is not designed, but is merely limited.

I recognize and admire the able public-spirited work that city planning administrators are doing. It is essential under present limitations, but these make it impossible to accomplish the purpose of the constructive rebuilding of America that we need so badly. For what is called city planning does not create solid realities; it outlines phantom cities. It does not determine the bulk, the solid body of a city. It is not positive, creative, as is architecture. It produces skeletons, framework for marketable lots, not vibrant communities of homes and working places for realistic and pleasant living and doing here and now in the 20th century. The ultimate shape and appearance of these cities is a chaotic accident. It is the summation of the haphazard, antagonistic whims of many self-centered, ill-advised individuals. Under these conditions people have little freedom of choice. They can fit their building into one of the cubbyholes outlined by a plot plan, or fit their family's life into the monotonous repetitive patterns stamped out by the builder's machine. Los at Los Angeles!

It shows, as do most American metropolitan areas that the only way to get modern cities and to keep them modern is by all inclusive architecturally planned city building, followed by permanent dynamic administration to keep their purpose and form alive.

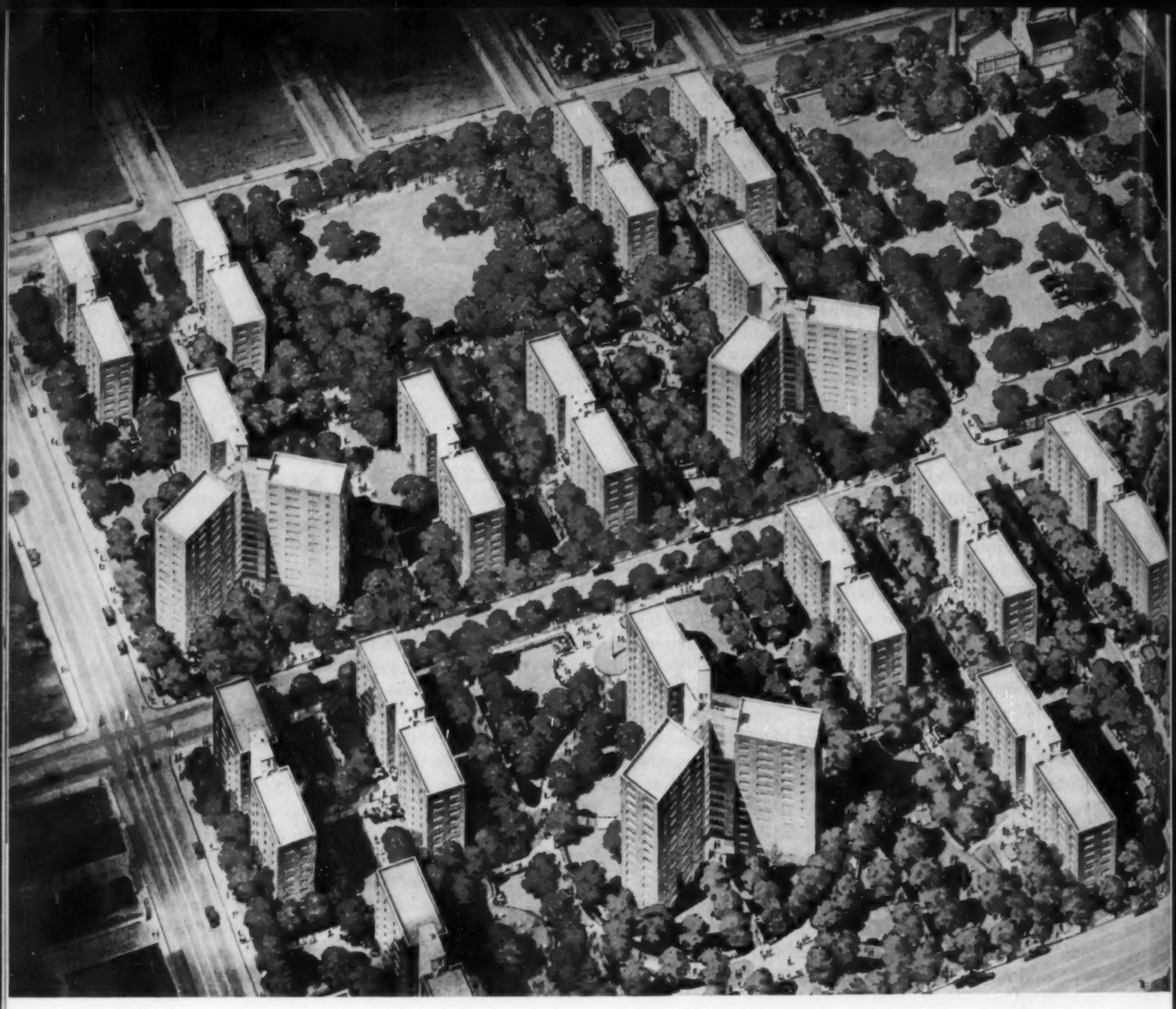
That zoning or similar restrictive methods will not serve this purpose is apparent in the present development of the San Fernando Valley. The City Planning Department of Los Angeles made a far sighted planto prevent the continuous sprawl of population over the 212 square miles of the Valley. They separated the moderate sized communities from each other by green belts zoned as agricultural open areas. This has come to naught. For the practical house developers have had the green belts erased where most needed, that is between the growing communities. Zoning is only a temporary barrier or protection. It cannot stand up against the

flood of monotonous commonplace or the greed of land subdividers. To permanently preserve green belts and keep modern green towns green and modern requires constructive, purposeful development and operation. Positive action must replace negative regulation for cities as well as buildings. That is why I am convinced that architects must be community architects.

In the development of a new culture, certain physical expressions of a civilization are affected much more slowly by technical, social and economic change. For example our cities have lagged far behind our buildings. The Technological Revolution has given us a fresh contemporary architecture. Look at our schools, our hospitals, our factories. They reflect a new way of living and doing, new understanding, new conceptions. The architects of America are beginning to develop an architecture that is thoroughly contemporary. We may even be on the threshold of a golden period of American architecture. Architects are free to mold and model their works to express their purpose and their feeling.

But our architecture is by no means fully free, for in our cities our buildings have no where to go. The golden period of American architecture will have to wait until our lagging cities recognize that this is the mid-twentieth century.

Modern architecture demands a modern setting, a place where it can be properly viewed and enjoyed, a site where it can open up and stretch and change. As community architects we must create cities and buildings as a single entity, completely inter-related in design and structures. These new communities should remain continuously youthful. Therefore they must be both spacious and flexible enough to take new form with changing ways of living, laboring and loafing. We must replace dying cities with communities that fit and foster the activities and aspirations of the present time. We must build new cities as a stage — a joyful setting for the good life here and now.

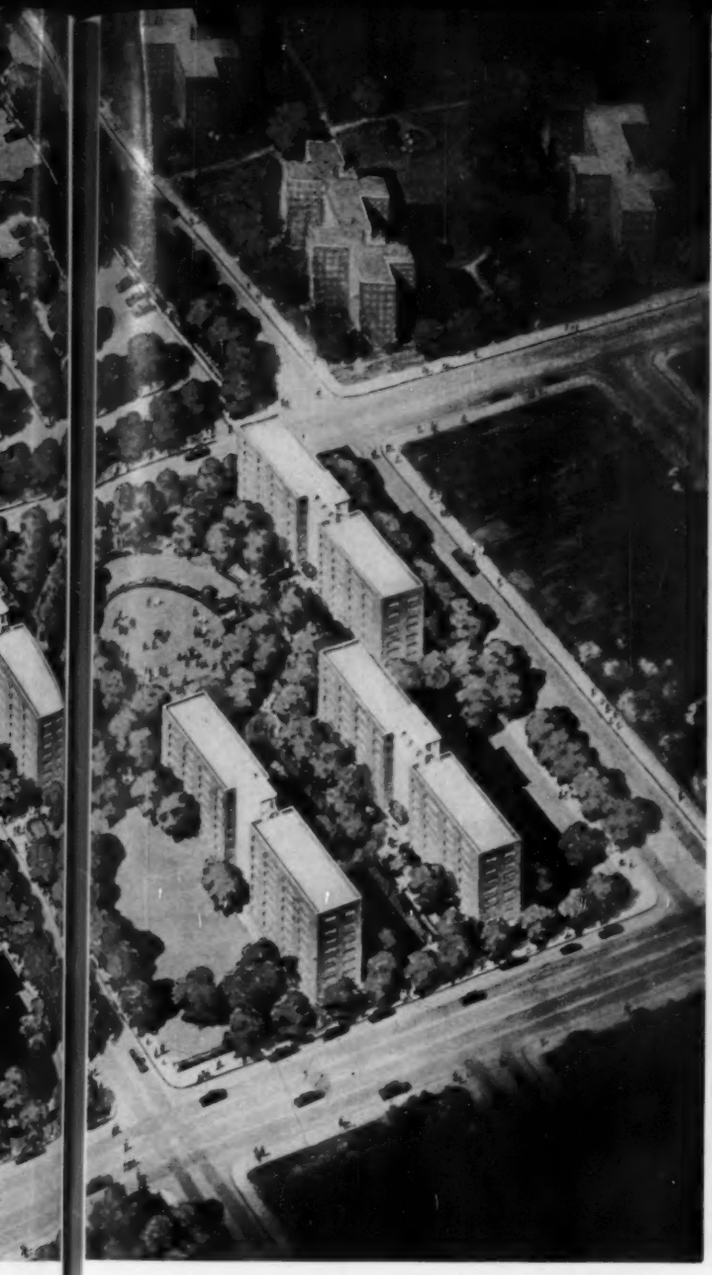


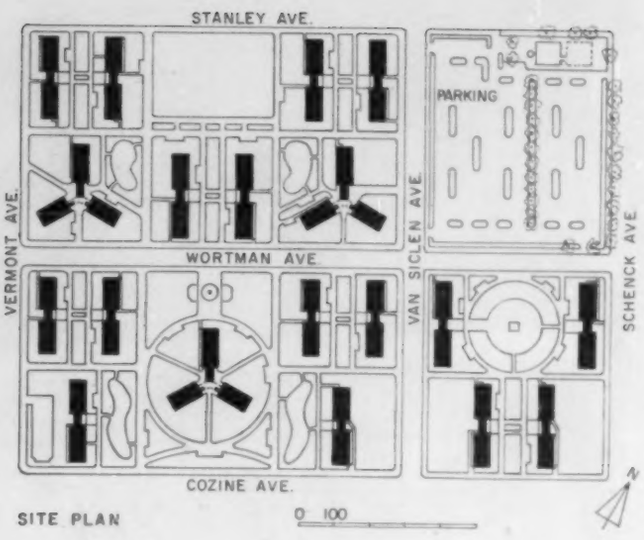
PLANNED FOR THE GOOD LIFE IN BROOKLYN

FOR LARGE-CITY APARTMENT DWELLINGS architects struggle ceaselessly against the hard facts of city patterns and land and building costs, always in an effort to achieve some progress toward the better life. This project, one of the most recent of New York City's middle-income public housing developments, marks recent innovations in the search for ideas. If it doesn't reach the ultimate goals outlined by Clarence Stein's paper (page 175), it is a good illustration of what is reachable today in Brooklyn.

The rendering above shows two streets cutting through the site, in place of six in the original street pattern. It shows lawn, park, playground and off-street parking areas, plus low percentage of land coverage. Only 12 per cent of the land will be covered with buildings, the remaining 88 per cent devoted to the outdoor amenities so stressed by Mr. Stein. There should be good measures of enjoyment, convenience and safety in this scheme.

Visible also are the architects' efforts to alleviate in some degree the filed-away feeling that New Yorkers get in large developments of high-rise buildings. The buildings are cut into two or three segments to make groups of adjacent apartments small, to keep the corridor-lengths short, and generally minimize the institutional aspects. The central elevator cores that





Site plan closes four of six cross streets, develops extensive open areas for playgrounds and lawns and parking. Buildings will cover 12 per cent of ground. Model photograph (below) is in effect a sun and shadow diagram, showing placement of buildings to avoid shading

Otis Checkman

Linden Houses, Brooklyn, N. Y.

For the New York City Housing Authority

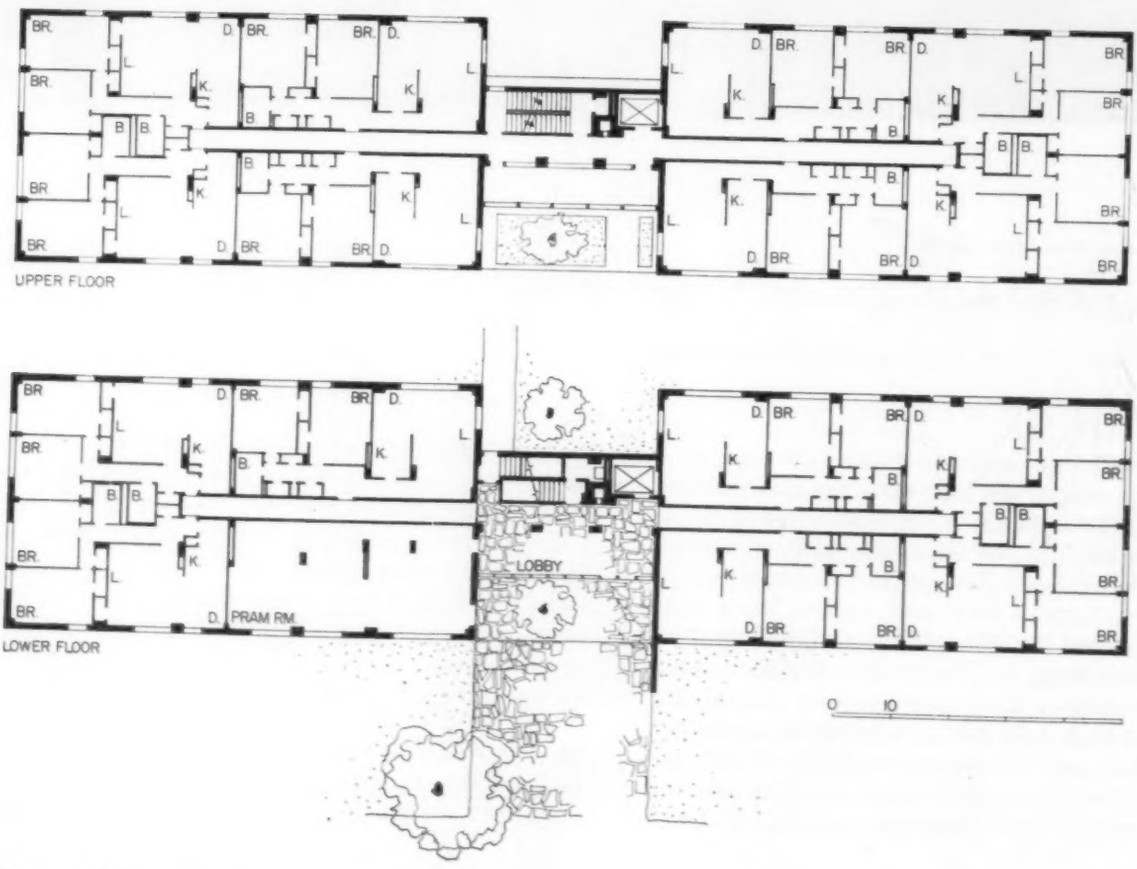
Seymour Joseph and Wm. Charney Vladek, Architects

serve the two or three sections visually seem to separate the buildings rather than join them. The glass-enclosed passages from elevators to apartment corridors are designed to heighten the sense of separation, also, of course, to afford open views of the landscaping from upper floors. Each of these core sections has a large terrace, protected to full height by steel mesh to serve as an outdoor living area for tenants. Perhaps tenants may get acquainted there in the evening; certainly the terraces will be heavily used as sunning areas for small children; it is easy to envision an effective if informal nursery developing on each floor as mothers get together.

At the ground floor these core sections will be as open as possible, with flagstone flooring extending through to outdoor terraces. There will be large pram rooms on each ground floor.

Except for one section in each of the three Y-shaped buildings, all wings contain only four apartments on each floor. Except for the one-bedroom units in these wings, each apartment will have corner exposures with cross ventilation.

Planned primarily for families with children, Linden Houses will contain 1092 four-and-a-half room apartments and 336 five-and-a-half room units. There will also be 336 units of three and a half rooms. Rents will average $20 to $22 per room per month.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LOWER FLOOR
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PRAM RM.
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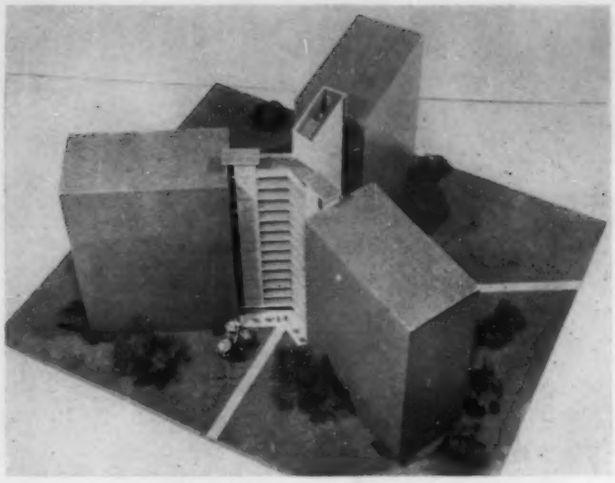

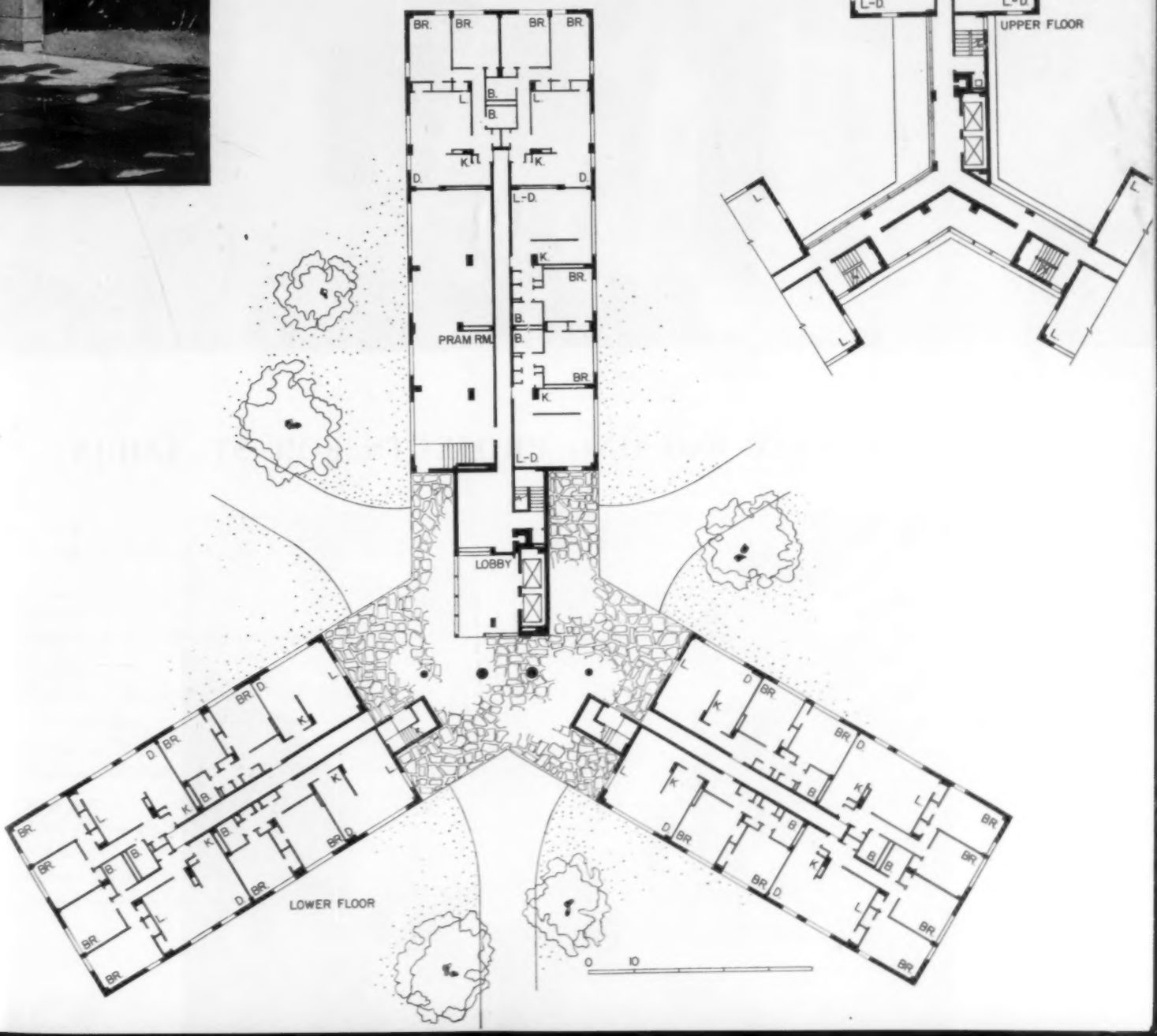
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10

FOUR VAST HOUSING PROJECTS FOR ST. LOUIS

Mac Mizuki

ST. LOUIS HAS BEEN ATTACKING its blighted areas with vast public housing projects which, since 1943, have been remaking the face of a large downtown section of the city. Completed, under construction or planned are a total of almost 7500 dwelling units, which will house approximately 30,000 persons, in seven coordinated projects. Of these, three earlier projects have been published, and one, the John J. Cochran Garden Apartments, designated as M-1-3, was awarded two architectural prizes (ARCHITECTURAL RECORD, June, 1954).

Architects Hellmuth, Obata & Kassabaum, Inc. (formerly Hellmuth, Yamasaki & Leinweber) have profited from the experience gained in that project, and have introduced several new concepts in the planning for the four projects covered in this report. These projects are designated as M-1-4, called the Wendell O. Pruitt Homes, M-1-5, called the William L. Igoe Apartments, M-1-6, as yet unnamed, and M-1-7, called the Joseph M. Darst Apartments.

Since all of these are, under federal legislation, combined low-rent housing and slum-clearance projects, located near the heart of the city, a high-rise, high-density solution was inescapable, and the problem was how to plan a high-rise project on a huge scale, and still provide, to the greatest extent possible under present legislation, communities with individual scale and character which would avoid the "project" atmosphere so often criticized.

Each of these projects has individual differences from the others, as a result of the natural evolution of the design as the architects worked with it. No one plan is thought of as the definitive solution, and future projects will no doubt also vary from the present designs. But some basic principles, which have been worked out in connection with all of these four projects, would seem to have general application.

The first, and probably the most important from the standpoint of the sharp budgetary restrictions and regulations of public housing work, is the establishment of the basic dwelling unit plan. All four projects can be seen as varying combinations of the two or three basic dwelling units. These have been worked out with such care and study that they assure fulfillment of regulatory provisions in many combinations, and the architects are then free to give the main emphasis to the overall plan of the buildings and the projects.

Another principle is the use of some device — gallery, large balcony, skip-stop elevators, restricted horizontal circulation — or combination of devices, to achieve that essential smallness of scale within the huge context of the project which alone will preserve conditions in which human beings can live comfortably and retain all that is possible of the small neighborhood.

A further principle is the use of varying colors and building materials to prevent an overwhelming, monolithic character in the projects. This again contributes to a human environment for people to live in.

Occupancy of the projects is proceeding according to the following schedule: M-1-4: completed and occupied in March 1955 (Negro); M-1-5: partially occupied Nov. 1955, full occupancy in July, 1956 (racially integrated); M-1-6: to be completed and occupied in early 1957 (racially integrated); M-1-7: occupancy to start in Sept., 1956 (racially integrated).

Hellmuth, Obata & Kassabaum, Inc., Architects

FOR M-1-4
John D. Falvey, Mechanical and Electrical Engineer

FOR M-1-5
William C. E. Becker, Structural Engineer

FOR M-1-6
Horner & Shifrin, Utility Engineers
Harland Bartholomew & Assoc., Landscape Architects

FOR M-1-7
John D. Falvey, Mechanical and Electrical Engineer
William C. E. Becker, Structural Engineer
Robert Joyce, Utility Engineer
Emmet Layton, Landscape Architect

M-1-6 (unnamed)

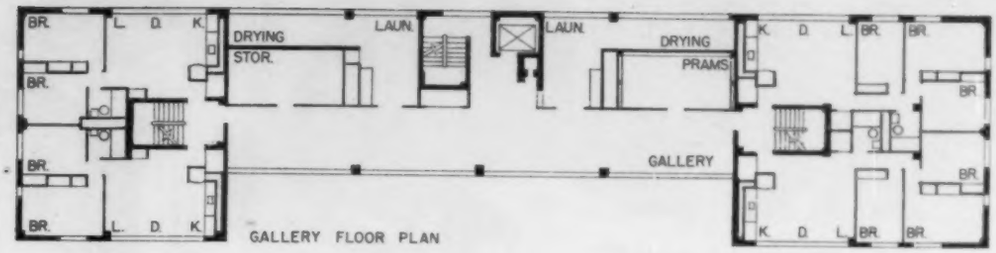
M-1-7, JOSEPH L. DARST APARTMENTS

In these two projects, the galleries have evolved into spacious balconies on each floor, which serve as connecting links between the different modules of each building complex.

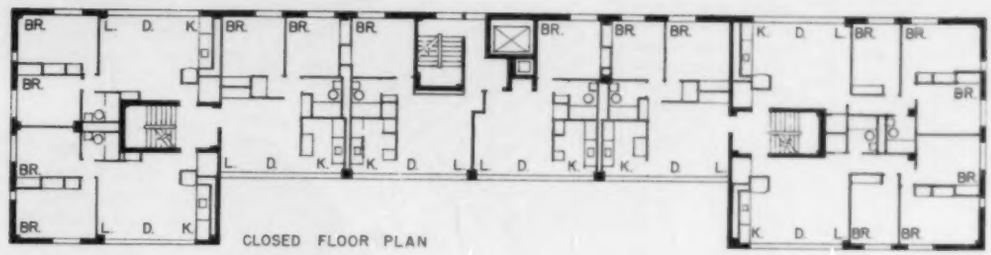
The skip-stop elevator plan is used for economy both of money and space. On each elevator floor are located laundry and drying rooms, and storage space.

Residents of the buildings will naturally gather into small "neighborhoods" about the stop floors, with balconies forming centers of smaller sub-neighborhoods shared by three or four families.

This plan makes possible the arrangement of the buildings on the site in any way that suits the practical and esthetic conditions. Long "slabs" of several building modules built end-to-end, or various combinations of "Y"s and crosses are equally feasible. Thus a visual line which is broken at irregular intervals avoids the regimented look of many projects. The fact that at the balcony joining points one can "see through" the buildings creates vistas of visual interest, of which the buildings are an integral part, rather than a necessary obstruction.



GALLERY FLOOR PLAN



CLOSED FLOOR PLAN

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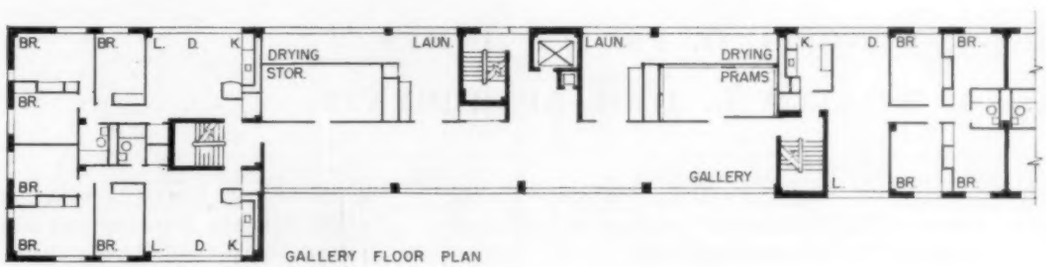
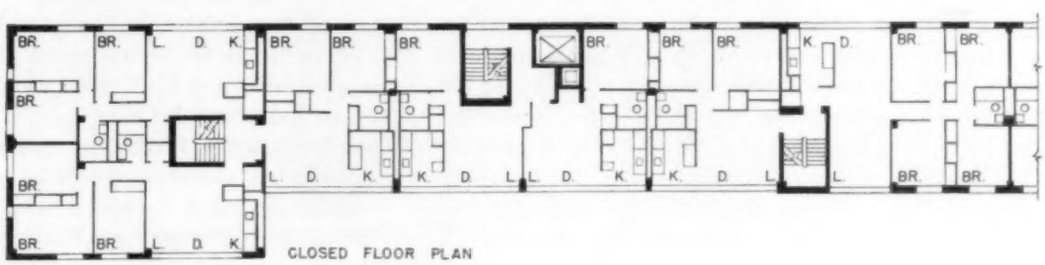


GALLERY FLOOR PLAN



CLOSED FLOOR PLAN

Mac Mizuki

M-1-4, WENDELL O. PRUITT HOMES

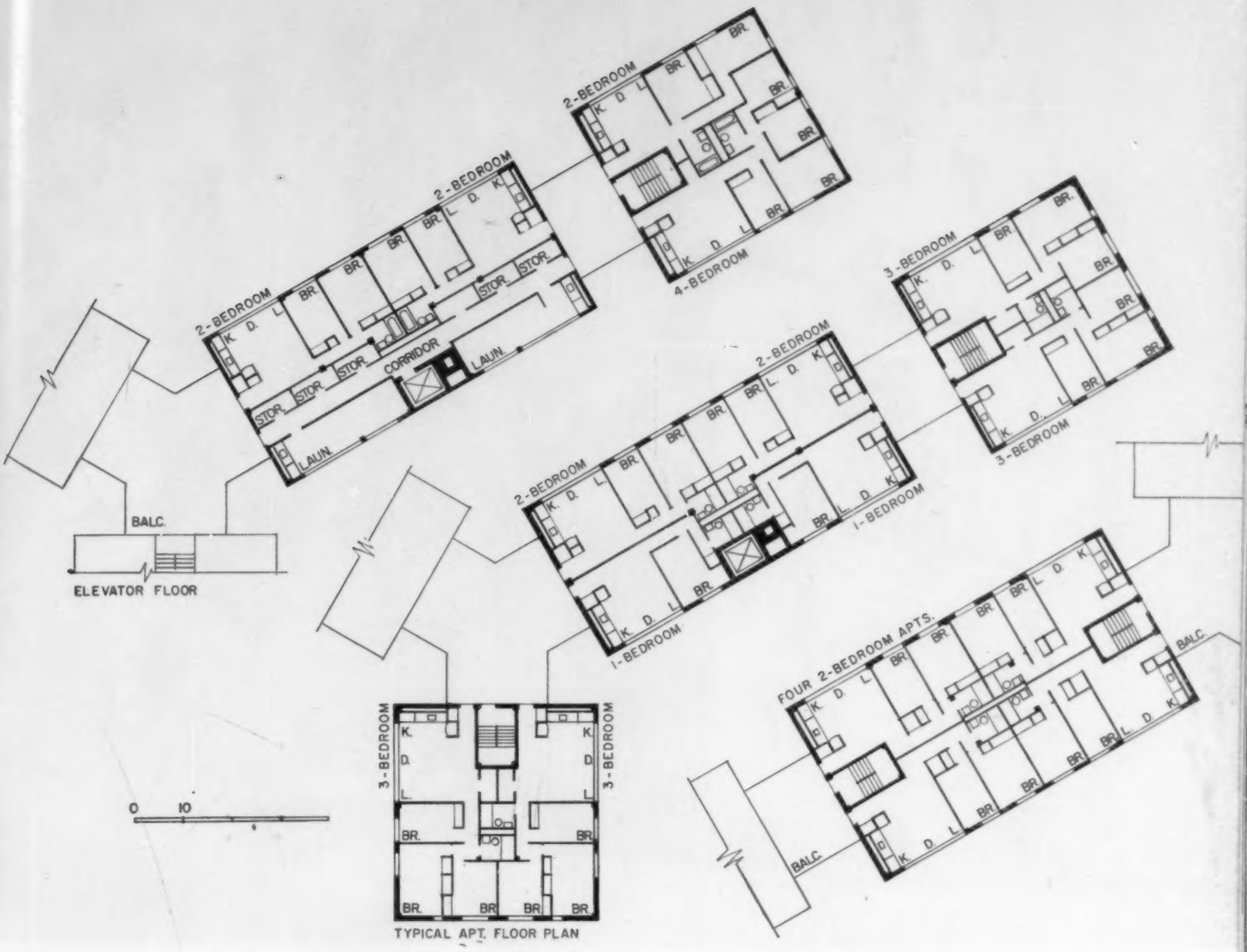
M-1-5, WILLIAM L. IGOE APARTMENTS

The glazed gallery, combined with the skip-stop elevator plan, results in the economical creation of individual "neighborhoods" within the buildings.

Elevators stop only at every third floor, so that residents of other floors walk either up or down one story. The stop floors contain long (85 ft. and 11 ft. wide) galleries which serve as the main hallways, with stairs acting as vertical hallways. Space used only for circulation is thus almost eliminated, since some fire stairs would be necessary, even if elevators stopped on each floor. The galleries are both community gathering places and safe enclosed play yards for small children, and keep the scale down to human size. Opening off the galleries are laundry and storage rooms, with space for wheeled toys. A mother can do her laundry with her child playing in sight and still be near enough to her apartment to keep an eye on the stove. Many a high-rent city apartment dweller would envy the storage area just off the elevator, instead of in the basement.

There is no horizontal circulation in the long, slab shaped buildings. Each gallery-centered unit is treated as an individual building, and if a building is to be increased, another stack of apartments, with its own galleries and elevators, would be added on the end.

Thus the small "neighborhoods" are preserved, and the units can be combined in any way that fits the site.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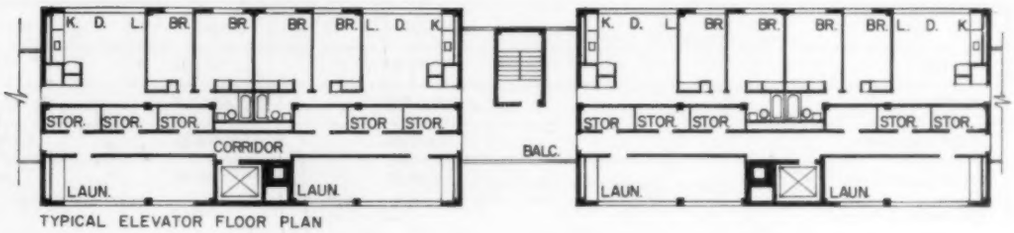
TYPICAL APT. FLOOR PLAN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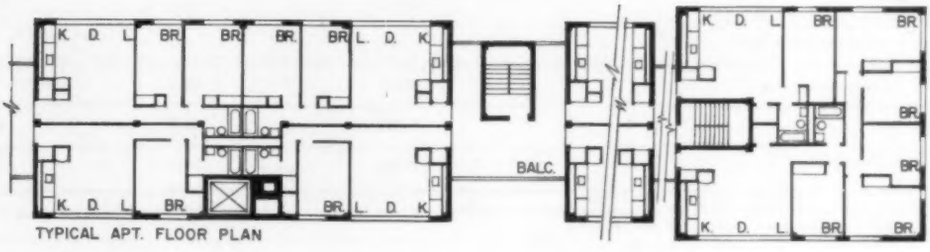
TYPICAL ELEVATOR FLOOR PLAN

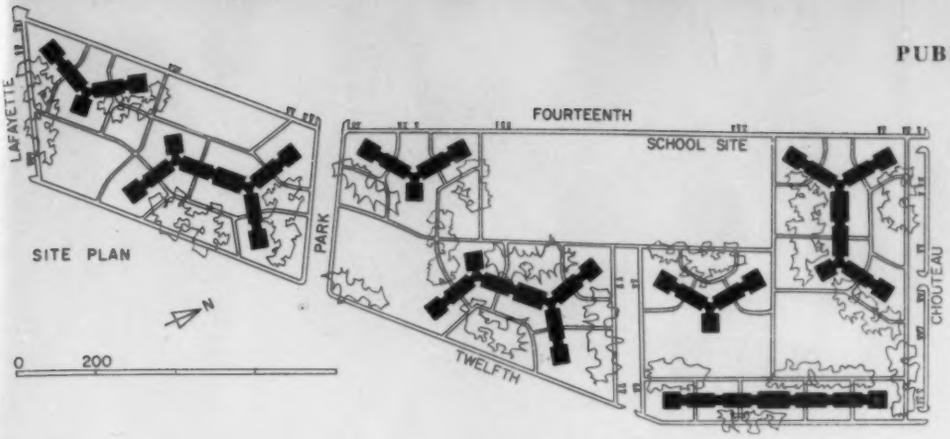

BALC.
TYPICAL APT. FLOOR PLAN

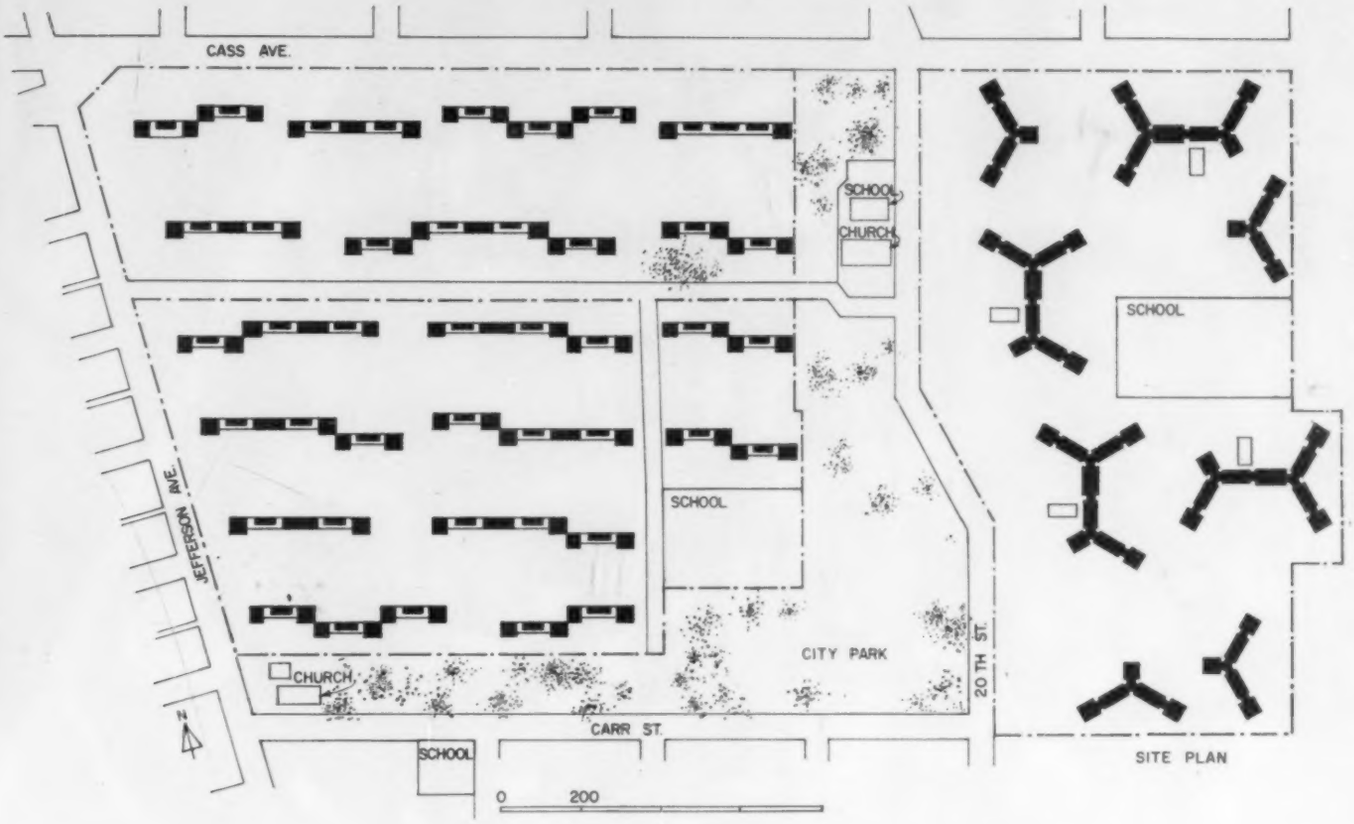
Mac Mizuki

COSTS, by project

	M-1-4	M-1-5	M-1-6	M-1-7
UNITS	1,736	1,132	1,320	1,238
COST	$17,839,500	$11,420,015	$6,512,073*	$6,162,266*
COST (per room)	2,143.15	2,115.31	2,115.68	2,155.76
COST (per sq ft)	10.63	10.36	10.45	9.89
AREA-SITE (acres)	26.3	17.9	25.7	28.5
AREA-BUILDING (sq ft)	1,678,075	1,102,604	623,308*	623,308*
PERSONS	6,932	4,556	5,025	4,624
DENSITY (persons per acre)	274	271	196	162
DENSITY (units per acre)	69.3	63.2	51.3	43.4
ROOMS	8,324	5,446	6,156	5,717
LAND COVERAGE	13%	11%	12.8%	13%

* These figures apply to the completed first half of these projects. Total figures may be approximated by multiplying by 2, but such total may well be affected by changes in plans to include units for aged persons in these projects.

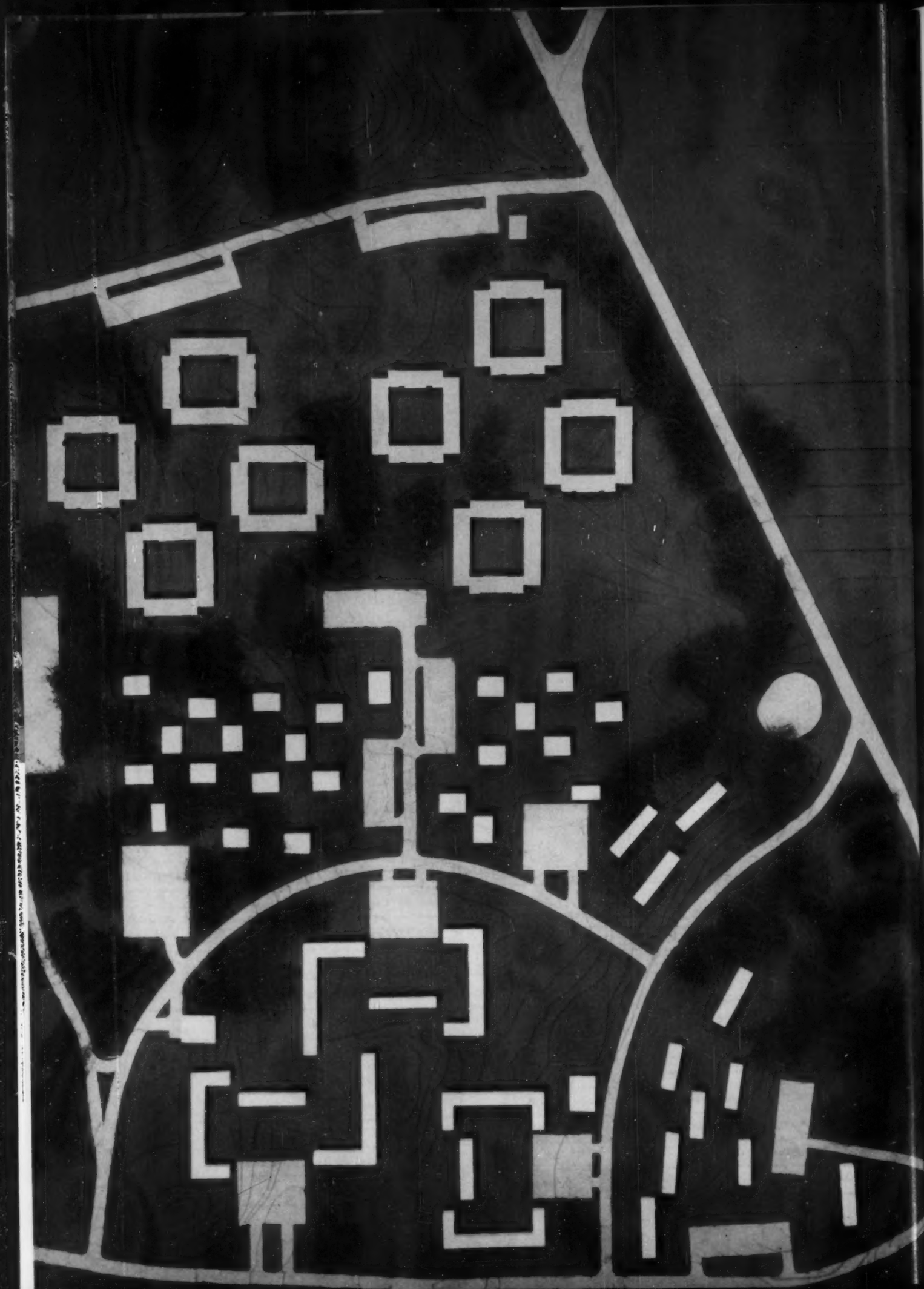


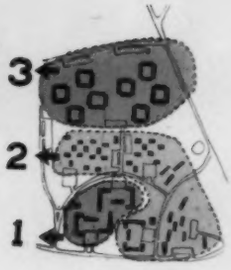


SUMMATION

Totals and averages for all four projects together

TOTAL DWELLING UNITS	5,426	Of these, 1,279 are *planned*, figure may vary
TOTAL PERSONS	21,137	Of these, 4,824 are *planned*, figure may vary
TOTAL ACRES OF SITE	98.4	
TOTAL ROOMS	25,643	Of these, 6,436 are *planned*, figure may vary
TOTAL SQUARE FEET	5,273,914	Of these, 1,246,616 are *planned*, figure may vary
TOTAL COST	$54,608,193	Of this, $12,674,349 is for construction planned, figure may vary
AVERAGE DENSITY (dwelling units per acre)	56.8	
AVERAGE DENSITY (persons per acre)	251	
AVERAGE LAND COVERAGE	12.9%	
AVERAGE COST (per sq ft)	$10.33	
AVERAGE COST (per room)	$2,129.55	





Hedrich-Blessing

CAMPUS HOUSING IN NEW AND VARIED PATTERNS

Northwood Apartment Group, University of Michigan, Ann Arbor, Mich.

Yamasaki, Leinweber and Associates, Architects and Engineers

As ARCHITECTS work always toward more human values in housing developments, particularly when designing large groups, they push always farther into the realm of innovative ideas or find new combinations of old ideas. The site plan photograph on the opposite page shows schematic variations these architects have used for a large group of housing units for the University of Michigan. Though there are other efforts not visible in the site plan, it is still clear that the different types of buildings indicated will obviate the institutional atmosphere of "public housing" which could easily have crept into so large a project.

The architects explain that this is but a preliminary scheme — already there have been refinements of the third group of buildings indicated at the top of the photograph. As the small diagram shows, the project is being done in three groups, the third group still existing only on paper.

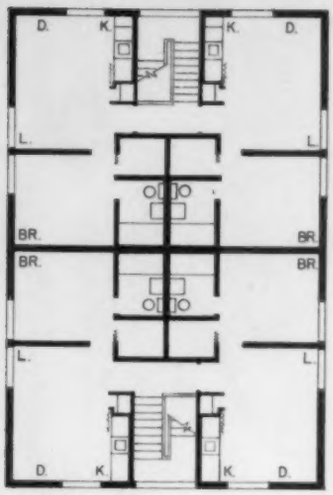
The first group was built on the highest, flattest part of a beautiful site with gently rolling contours. The architects, wanting to break with the more formal lines of the main campus, used the U and L type buildings to delineate informal and varied courts. The pattern changes in the second group, using a compact rowhouse scheme; these are also informally placed, pretty much as dictated by the natural contours of the land. In this group there is still another pattern; in this four small apartment units are placed back to back on each floor of compact rectangular buildings. In this type of building the porches are eliminated, so that this group is more economical by that much.

The third group, as now proposed, uses a slightly more formal, enclosed court; this scheme would use quite similar plans but would give the buildings a different character. The separate buildings are disposed in a thoroughly informal pattern.

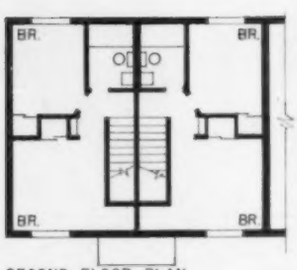
Various differences in design and materials also contribute to a visual change of pace. The architects have chosen different shades of the same type of brick for the several types of buildings.

UNIVERSITY OF MICHIGAN HOUSING

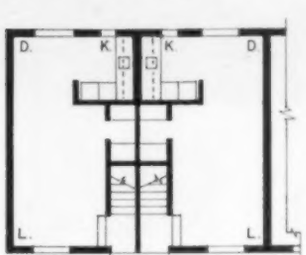
Hedrich-Blessing



SECOND FLOOR PLAN

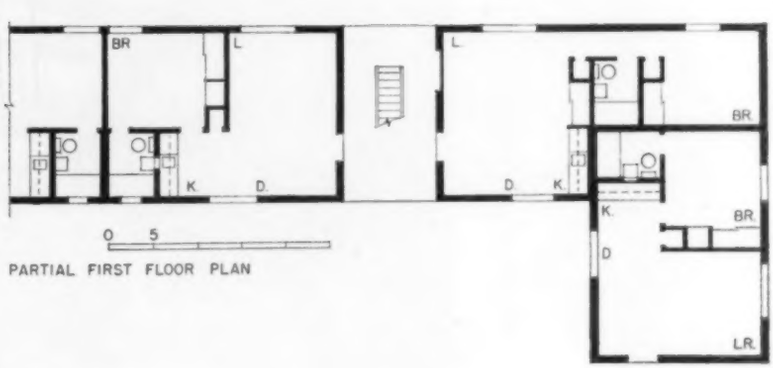


SECOND FLOOR PLAN



FIRST FLOOR PLAN

A beautiful site with gentle contours and large trees, which were saved, contributed heavily toward the final environment that the architects sought. Open sections for entrances and stairs break up the rows of apartments and provide a see-through openness, not to mention covered porches beside each apartment. Plans are various combinations of row houses, and one-bedroom units



PARTIAL FIRST FLOOR PLAN

UNIVERSITY OF MICHIGAN HOUSING

Hedrich-Blessing

Interiors generally manage a simple and informal elegance and a feeling of openness. Windows are arranged in large groups to provide a maximum of light and view but to give also plenty of wall space within for efficient furniture arrangement. Wherever possible the living-dining spaces are kept open right through the building. Exteriors were deliberately varied in fenestration as well as in brick colors, as part of the whole effort to avoid monolony

Housing for Single and Married Students

Purdue University, Lafayette, Ind.

John W. Galbreath & Co., Developer

John R. Diehl, Architect

Richard L. Tully and Frederick H. Hobbs, Consulting Architects

Marion V. Packard, Landscape Architect

CAMPUS HOUSING: CONTEMPORARY VERSION

PURDUE UNIVERSITY HAS BEEN TACKLING the problem of housing for married students, now an established if not necessarily permanent fixture on college campuses. The time has gone for the temporary structures with which this need was first met, the heavy enrollments of early postwar years have not slackened and now promise to go upward rather than downward. Construction costs have not diminished either. All in all, there is a great housing problem on campuses, for single and married students alike, calling for some new concepts of housing, also of land use.

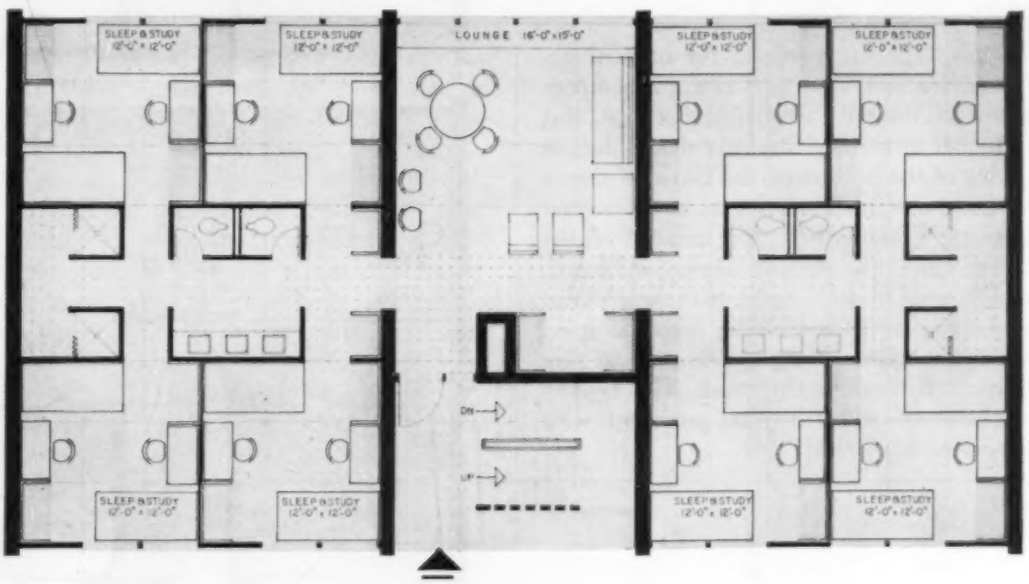
Purdue has decided against the traditional types of dormitory buildings, has already proved that informal and more intimate court-type developments are both more economical and more acceptable to students. Land for such buildings is not, of course, unlimited, so this project aims at the informal two-story buildings.

As for married students, the scheme proposes buildings of one-, two- or three-bedroom apartments, by far the largest number having one bedroom. These are designed to be convertible to single rooms for single students, just in case the trend reverses at some future time and the proportion of married students declines. Thus an area planned for two one-bedroom apartments could be rearranged for four double rooms for single students, with two bathrooms and a communal lounge for the four rooms. The two-story buildings, however long, are divided by masonry walls into small units, to obviate as far as possible the large groupings of the older dormitory buildings.

The site is a relatively flat, L-shaped tract of some 80 acres, adjacent to the main campus and now partially occupied by temporary buildings. The original scheme calls for buildings for single students closest to the campus, those for families with children farthest away. The site plan provides a studied arrangement of buildings, open spaces and streets accommodating adequate vehicular traffic and off-street parking, but produces little internal traffic and permits the complete separation of pedestrian circulation. The larger groups of buildings share a common park area to which all have easy access; in general, two buildings share a common court through which all students therein approach; 16 to 32 single students share an entrance; 8 to 16 share a floor and common lounge room; 4 to 8 share a bath or toilet area; and 2 share a sleep-study room in all cases.

SINGLE STUDENTS' BUILDINGS

In buildings designed for single students the rooms are arranged in groups for 16 students, with a lounge area and two bath and toilet areas. Each sleep-study room, for two students, measures 12 by 12 ft. There is laundry and storage space in the basement. Each building section then houses 32 (two floors). Says the architect, "Building grouping provides opportunity for supervision while maintaining intimacy and privacy for the occupants."


SLEEP & STUDY 12'-0" x 12'-0"
SLEEP & STUDY 12'-0" x 12'-0"
LOUNGE 16'-0" x 15'-0"
SLEEP & STUDY 12'-0" x 12'-0"
SLEEP & STUDY 12'-0" x 12'-0"
DN
UP
SLEEP & STUDY 12'-0" x 12'-0"
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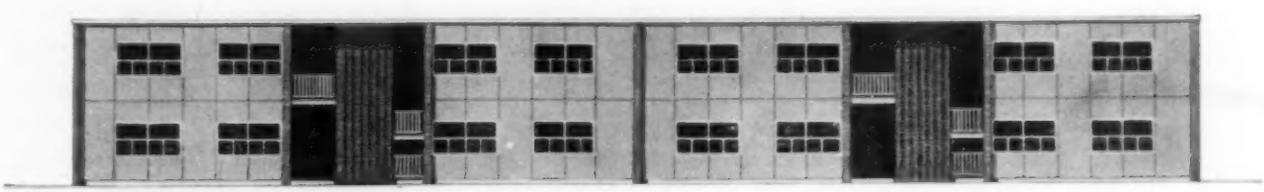
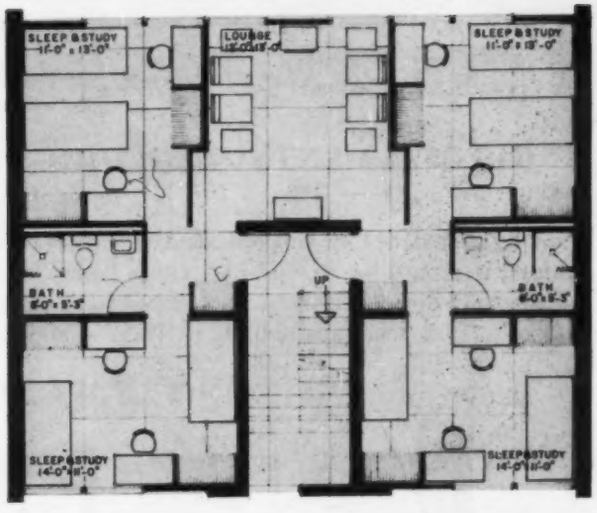
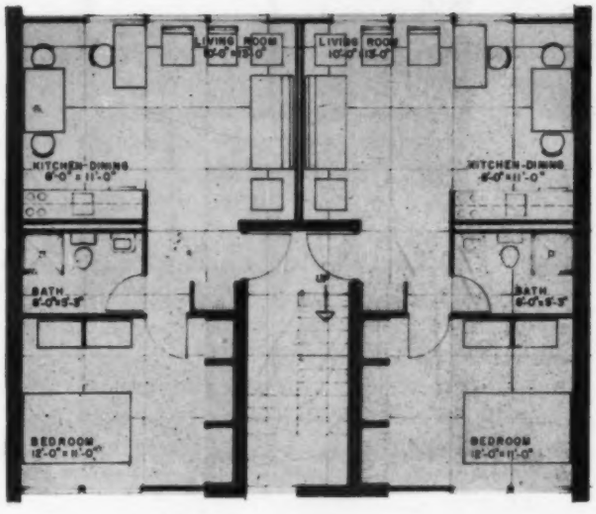
SLEEP & STUDY 12'-0" x 12'-0"

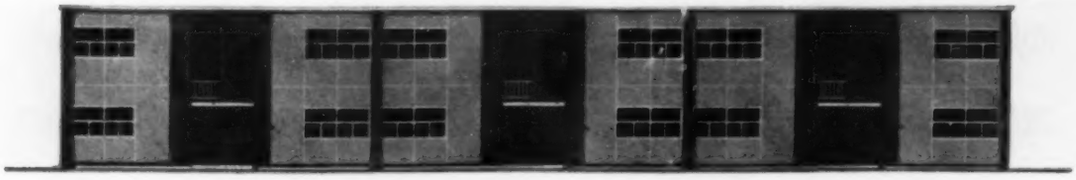


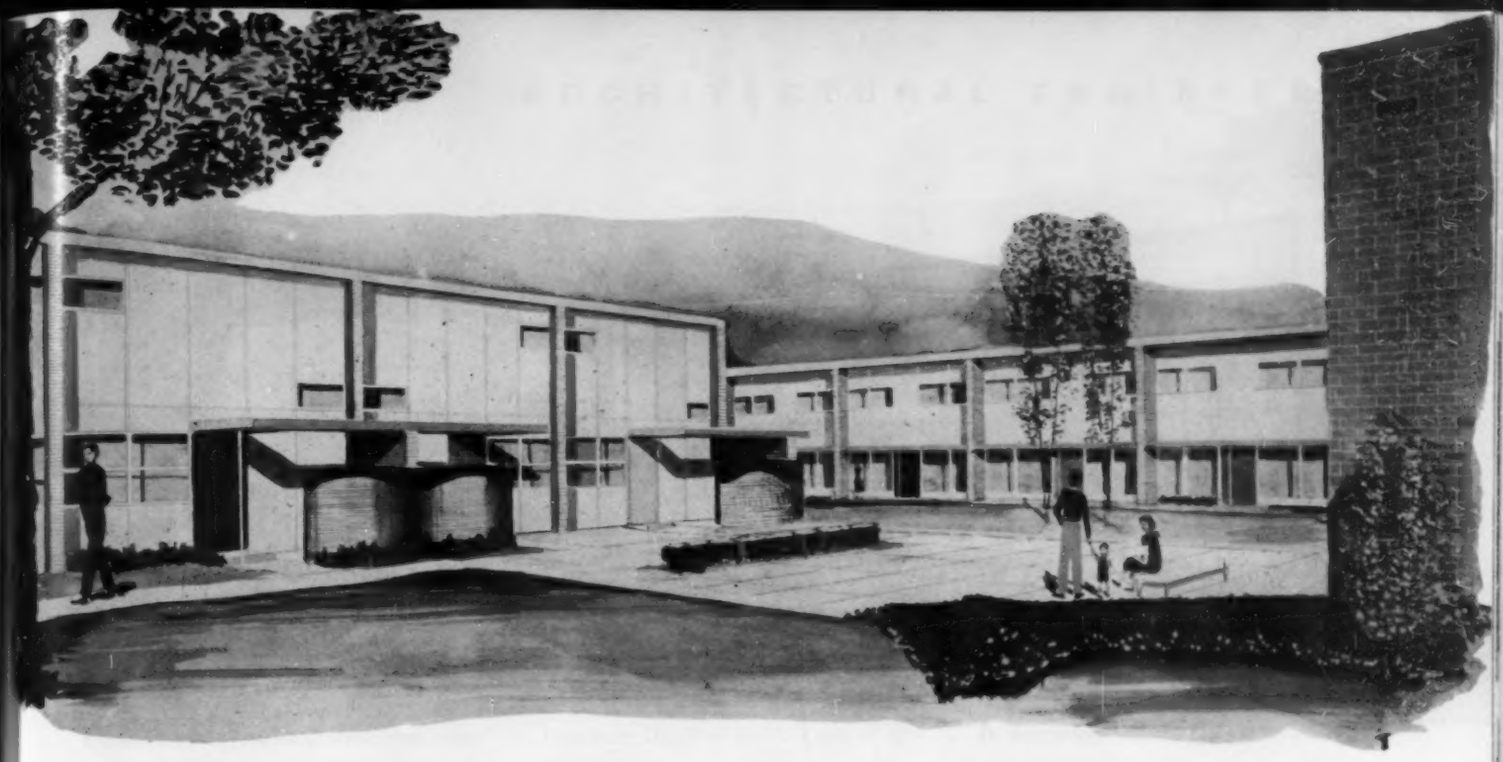


CONVERTIBLE ONE-BEDROOM APARTMENTS

Buildings of this type are designed for original occupancy by married students, with two one-bedroom apartments on each floor of each building section. But in case the number of married students should decline in another swing of the pendulum, the two apartments may be arranged for single students, as in the second plan. The change would involve the removal of the package kitchen units, the partition change indicated, and the rearrangement of closet space, to make a lounge and two sleep-study rooms out of the space occupied by two living-dining spaces. The bathrooms would stay as is, being shared by four students each. This type in the original scheme was to be the most prevalent, with 700 one-bedroom units planned.

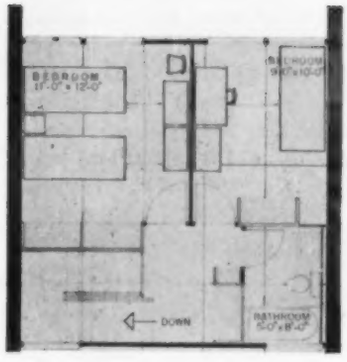


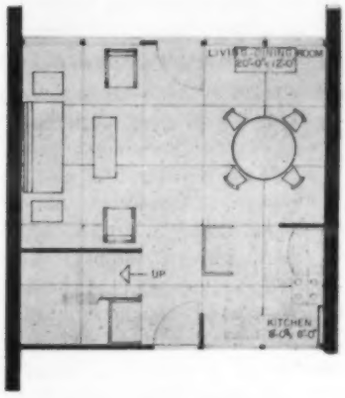


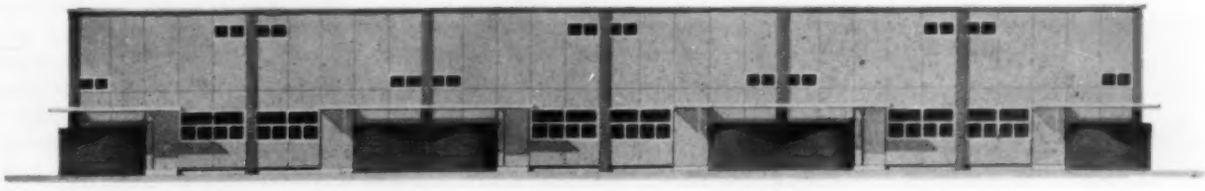


TWO-BEDROOM APARTMENTS

For married students with one child, the scheme contemplates two-bedroom apartments, in a generally row-house plan. In the site plan these are shown farther removed from the campus than the buildings for single students or for married ones without children. The total scheme proposes kindergarten and nursery school, children's play areas, parks and neighborhood shopping facilities. The proposal calls for 250 of these two-bedroom apartments; these would not, of course, be easily converted for single students, and are intended to remain as permanent for married students. One presumes, however, that they would never go begging even should the married student population decrease, for the faculty members would probably be glad to take over, at any time.



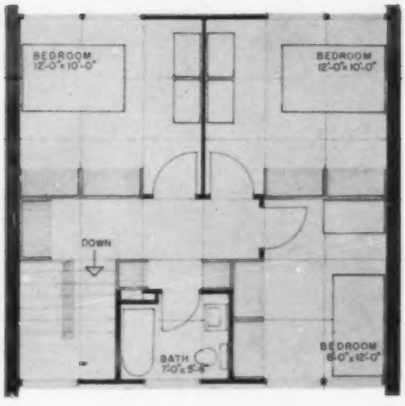


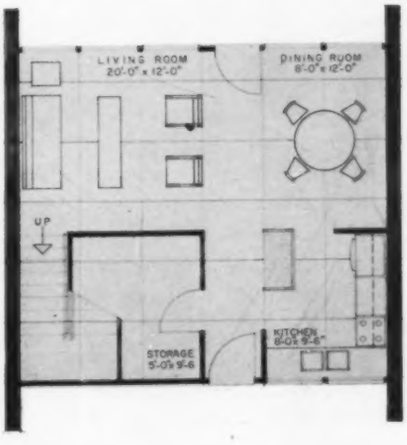


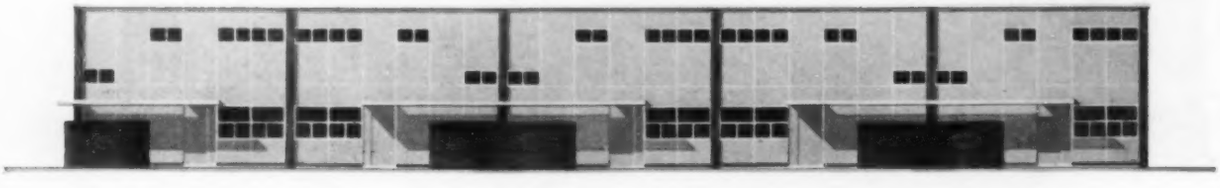
STUDENT HOUSING: PURDUE

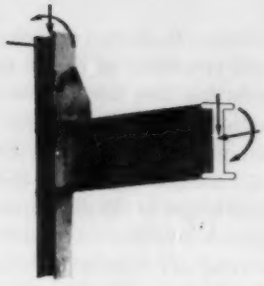
THREE-BEDROOM APARTMENTS

For the married students with still more parental responsibilities, three-bedroom apartments are also contemplated. These would be the smallest group, with some 50 of these units planned. The generally row-house scheme is maintained, each unit being six 4-foot modules in each direction, instead of the five for the two-bedroom buildings. And the three-bedroom apartment buildings would naturally occupy the part of the site farthest removed from the campus. Each of these units has about 1100 sq ft, with eight units in the typical building.









A CHANGE AHEAD FOR STRUCTURAL DESIGN

Plastic Theory, Ultimate and Limit Design

Article 1: Background and Implications

By **Edward Cohen,** *Associate, Ammann and Whitney, Consulting Engineers, New York*

UNTIL MODERN TIMES all structures were built to support the dead weight plus the superimposed live loads without collapse. Factors of safety and stresses, as such, had no meaning to the designer since no rational methods of computation were available. It is interesting to note that the structures of ancient Egypt, Greece, Rome and Renaissance Europe were achieved without the advantage of any reliable scientific theory or mathematical formulas. Structures were built by trial and error. Failures were common and it was not unusual to rebuild structures such as the Roman arches several times before achieving the final results which survive today.

Slowly, rough rules for judging the approximate strength of beams, columns, arches and domes were developed. It was not until the 16th century that Galileo began the solution of the problem of bending and not until the middle of the 17th century that Robert Hooke formulated "Hooke's Law," the proportional relationship of stress and strain in the elastic range. In the following centuries, this law was elaborated to provide rational methods of analysis and design to replace the previous methods based on experience and experiment.

In reinforced concrete design which started at the end of the 19th century, ultimate strength methods based on nonlinear compressive stress-strain diagrams (stress no longer proportional to strain) for concrete were proposed along with the straight-line method. In view of the limited experience and laboratory tests at that time, the straight-line method won acceptance because of its relatively simple mathematics and adequate safety. It was incorporated in the first American code of reinforced concrete in 1909.

However, this was not the end of ultimate strength and in 1937 C. S. Whitney presented a practical, adequately documented method of design based on an inelastic or "plastic" stress-strain relationship. In 1951 the ACI approved an ultimate strength method for the design of reinforced concrete arches, and, this year, has incorporated an *ultimate strength* method as part of the basic building code for all reinforced concrete structures. *Ultimate strength design* has been used for several years in Brazil, Russia and other European countries. Last year an *ultimate strength* code was also adopted in Great Britain.

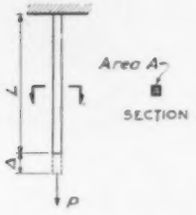
The first application of limit or *plastic* analysis to structural design was made by G. V. Kazinczy in Hungary in 1914. Later, plastic design for steel structures was proposed by N. C. Kist in Holland in 1920, by J. A. Van den Broek in the United States in 1940, and by J. F. Baker in Great Britain in 1948.

In recent years extensive testing of individual members and full scale structures and research on practical design methods have been conducted at Lehigh University in cooperation with the American Institute of Steel Construction and the Welding Research Council. Although an American code for *plastic* design in steel has not yet been formulated, *plastic* design has been incorporated in the Standard British specifications as an acceptable design method.

One of our oldest building materials, timber, has always been designed on the basis of strength although in recent years the terminology of stress has been adopted. Thus, it appears engineers have been more prone to retain or adopt plastic or ultimate strength methods for the design of those materials which are least amenable to "accurate" analysis.

In discussing ultimate strength today no one proposes returning to the wasteful and often dangerous procedures of previous times. Rather it means carrying forward the analysis of structures into the region where stress is no longer proportional to strain and which the early engineers and mathematicians avoided, partly because either it did not lend itself to the available concepts and methods of analysis, or because many of the common materials of their time were not sufficiently ductile to be trusted far beyond the yield point. It is also true that one phase of ultimate strength methods — redistribution of moments, thrusts, etc., from overstressed points to those originally understressed — is applicable primarily to statically indeterminate structures which have become practical only in recent years with the advent of reinforced concrete and welding.

Although structural engineers have placed great reliance on elastic stress analysis for purposes of analyzing and designing structures, they have not accepted the results without a "grain of salt" based on experience and laboratory tests. For example ductile steel plates with rivet holes are designed for tension on the basis of the average stress on the net section whereas the theoretical elastic stress at the hole may be as high as three times the average. Circular steel sections and pins are allowed higher working stresses in flexure than rectangular or WF members. Continuous WF beams and rigid frame columns are allowed higher working stresses at points of maximum moment than simple beams. Shallow timber beams are allowed higher stresses than deep narrow beams. In those instances where tests and experience showed a flexural strength



HOOKE'S LAW

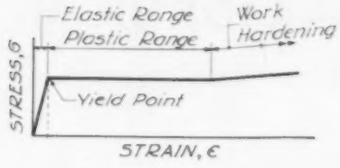
Stress is linearly proportional to strain, thus:

$\sigma = E\varepsilon$, *where*

$\sigma = \frac{P}{A}$ = *stress or force per unit area*

E = *modulus of elasticity*

ε = *strain* $= \frac{\Delta}{L}$



Theoretical Stress-Strain Diagram for Steel in Tension

YIELD POINT

The values of stress and strain after which strain increases without increase in stress

WORK HARDENING

The increase in strength after substantial yielding has taken place

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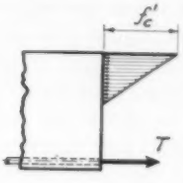

Straight-Line or Elastic Stress Distribution for a Reinforced Concrete Beam

STRAIGHT LINE METHOD

Analysis of reinforced concrete sections on the assumption that stress is proportional to strain. Since concrete has no tensile strength, stress distribution is shown only for the section in compression, for which stresses are assumed to vary from zero at the neutral axis to maximum compression at the top fiber

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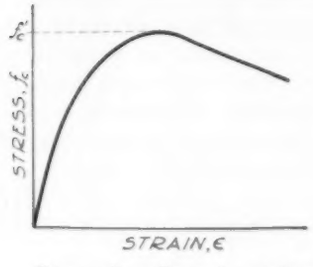
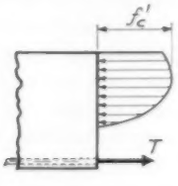


Curve for Concrete Cylinder Under Compression



Plastic Stress Distribution for a Reinforced Concrete Beam

PLASTIC THEORY
(Reinforced Concrete)

Application of the actual non-linear stress-strain curve of concrete to design. The stress distribution curve (lower left) more nearly gives the true condition in a concrete beam under load

greater than indicated by elastic theory and the yield stress obtained from simple tension or compression tests on small samples, a new critical value of stress for flexure, the modulus of rupture, was arbitrarily used. This stress, introduced into the equations of elasticity, gives a reliable value of bending strength.

The strengths of tier buildings for lateral loads caused by wind or earthquake are normally computed by limit design. Retaining walls are designed not only to limit the soil bearing stress but also for a given factor of safety against overturning. Although it is only in recent years that a rational theory has been evolved for columns, the design of such members in both structural steel and reinforced concrete has long been on an ultimate strength basis. Allowances for inelastic action, moment and stress redistribution are not new to building codes.

What is new is the development (and acceptance in reinforced concrete design) of rational and consistent design methods for beams, columns and frames of both reinforced concrete and structural steel which will give a uniformly reliable estimate of their strength. It may come as something of a shock to some that while the present allowable "elastic stress" design methods are adequate and safe, the actual factors of safety are highly variable, though generally on the side of excess safety.

An urgent need for calculating the actual strength of structures beyond the point of initial yield which arose during World War II in the design of shelters, ships, etc., against high explosives brought attention to earlier investigations on the ultimate strength of structures. Further impetus was given this field of research following the war when the government embarked on an extensive program to develop basic data and design methods which could give a reasonably accurate prediction of the effects of atomic bomb blast pressures on structures. In order to make such predictions, an accurate method of strength computation was required and only those methods which considered plasticity and moment redistribution were found adequate. These methods have also been applied to the rational design of structures subjected to other types of dynamic loading such as earthquakes. It is now, partially as a secondary but beneficial result of that program, that the advantages of such methods for normal building design are being presented. Engineers are interested in these methods as new and better tools for proportioning structures to achieve uniformly adequate but not excessive strength.

In general, certain economies can be expected as a result of eliminating excess material required by the methods of elastic stress or frame analysis. These savings are most definite in the case of all-welded, rigid frame structures made of standard rolled steel shapes and reinforced concrete arches and rigid frames. Where controlling design conditions are the result of temperature, shrinkage, settlement, etc. additional economies are possible because the moments and thrusts due to the above are also reduced as the sections become lighter and shallower, thus decreasing the moments of

inertia and increasing the flexibility. Economy is an important by-product of using these new and more reliable and rational methods of design.

Therefore it is not surprising that architects have begun to hear frequent references to *ultimate strength* and *plastic* design from their civil engineering associates, although often without very much explanation and with very little in the way of apparent practical results. To some architects *ultimate strength* design has brought visions of collapsing structures, and plastic design, pictures of tired, sagging beams. Such premonitions have no relationship to actuality. Under working loads, structures which are properly designed by *ultimate strength* or *plastic* methods are still primarily in the elastic range and deflections are kept within allowable limits. It provides a method of keeping factors of safety close to their intended value. It avoids making portions of some structures unnecessarily strong relative to established standards.

Ultimate strength is a term which has come to be most closely identified with reinforced concrete design of sections for flexure and flexure plus direct stress on the basis of a non-linear stress-strain relationship which has been incorporated in the current American Concrete Institute Building Code. Within these terms of reference, ultimate strength design refers to the design of structural members at all sections by plastic theory for thrusts and moments determined from elastic frame analysis for the assumed design loads multiplied by specified load (safety) factors. It is not design for failure but for predetermined factors of safety against the actual ultimate strength of each section. These factors of safety are established on the basis of experience and laboratory tests to avoid excessive cracking of the concrete under working load and allow a margin of safety against overload which is consistent with the intentions of previous practice. Because reinforced concrete structures are designed and detailed for the forces acting on each section, the question of allowing plastic redistribution of moments and thrusts is not important except for special structures or for loads other than considered in the initial design. The retention of elastic frame analysis is the result of such considerations and not because reinforced concrete is not a ductile material. Properly detailed reinforced concrete structures can undergo extremely large plastic deformations without loss of strength. The main differences between members designed by *ultimate strength* and those designed by conventional methods come about because these methods greatly underestimate the strength of many commonly used sections.

Although the basic objective of plastic design in steel is the same as in the ultimate strength design of reinforced concrete — the achievement of a uniform factor of safety against overload — the approach is quite different in its details. As in the ACI *ultimate strength* code for reinforced concrete there is at present no intention of reducing the minimum factor of safety provided in the present AISC code. On the other hand it could be

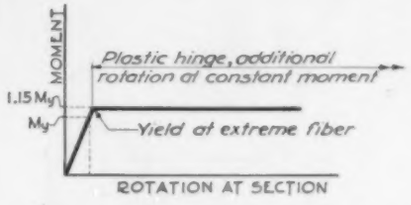
Stages in the Development of Plastic Stress Distribution on a Homogeneous Member

PLASTIC STRESS DISTRIBUTION (Structural Steel)

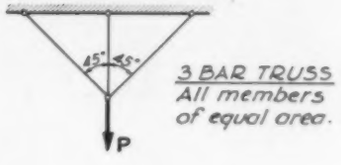
Distribution of stress over the cross section of a beam when it has reached its full moment capacity and the strains at all locations are past the yield point

PLASTIC HINGE

A section which has reached its full capacity and can continue to rotate without change in moment

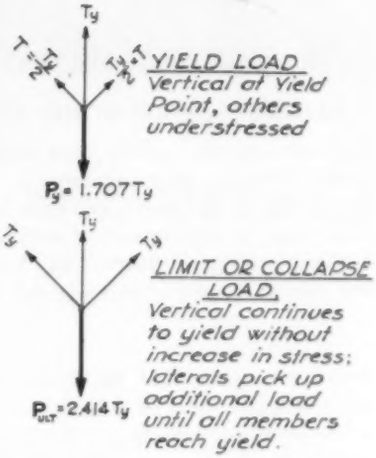


Moment-Rotation Diagram for WF Beam

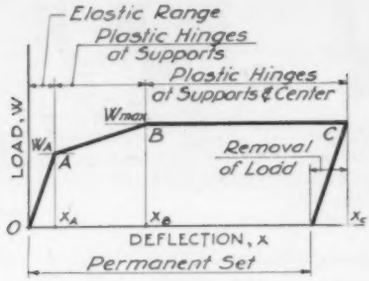


REDISTRIBUTION OF THRUSTS (Limit Analysis)

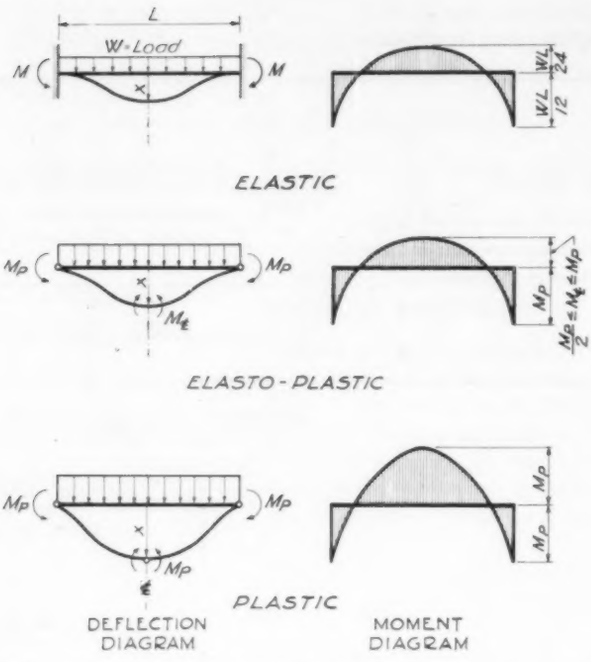
The process whereby internal forces are transferred from members which are already stressed to their full capacity, to those having reserve strength, as the external load is increased


Ty
YIELD LOAD
Vertical at Yield Point, others understressed
Py = 1.707 Ty
LIMIT OR COLLAPSE LOAD,
Vertical continues to yield without increase in stress; laterals pick up additional load until all members reach yield.
Pult = 2.414 Ty

Limit Analysis for a Simple Indeterminate Truss



Load-Deflection Diagram



Redistribution of Moments for Fixed End Beams

REDISTRIBUTION OF MOMENTS (Limit Analysis)

The process whereby internal forces are transferred from sections (plastic hinges) already stressed to their full capacity, to those having reserve strength, as the external load is increased. Note what happens in the moment diagrams. In the elastic range the bending moment in the center is half that at the fixed ends; in the elasto-plastic range, the moment may be from over half to nearly equal that at the fixed ends; in the plastic range moments at the center and fixed ends are equal

reworded to state that the factor of safety in flexure could be defined as 1.88 on the plastic strength rather than 1.65 against the yield stress. Thus simple beams, columns and trusses, designed by either present methods or plastic theory would be practically the same.

Flexural members of round or square section for which a plastic stress distribution gives the greatest increase in strength are rare and uneconomical in building construction.

The primary economies possible in the plastic design of structural steel building frames result from the redistribution of moments and thrusts in frames of uniform rolled sections. Because in many cases economic considerations make the use of uniform rolled sections desirable, greater emphasis has been placed on departure from elastic frame analysis as well as elastic stress analysis by using the plastic moment-thrust capacity in combination with limit design to obtain the true collapse load of the whole structure. Thus, by allowing sections with high elastic moments to be strained beyond yield and develop into plastic hinges, the overload moments are redistributed to sections with low elastic moments until these sections also are brought to their maximum capacity. Final moments at critical sections of a uniform, fixed-end beam under uniform load become the same at failure.

Although similar *savings in weight* can be obtained with current design methods by varying the cross-sections, by tapering or haunching members or by the addition of coverplates — that is, designing the members section by section — the fabrication costs are high and, except for long span members, bridges and certain special cases, the final *dollar cost* is increased. For this reason moment redistribution, or limit design plays a role of much greater importance in plastic design of structural steel where uniform sections are desirable, than for reinforced concrete where the reinforcement at each section of a beam is proportioned according to the variations of the moment diagram.

Ultimate strength design in reinforced concrete will soon make its effects known as more designers become familiar with the new appendix to the ACI code and learn to use this simplified but more accurate approach to reduce the computational work of design. It can be expected that as time goes by the tendency will be toward shallower, more heavily reinforced members and slenderer structures in general. At present, plastic design in steel will continue to be used in this country for the design of special structures outside the control of building codes and for investigation of existing structures for unusual loads. When a complete standard specification for plastic design in steel is written and accepted it can be expected that a great impetus will be given to the all-welded rigid frame type of construction where important economies will be possible.

It should not be inferred that the ultimate strength methods will completely replace elastic stress calculations. In many cases the elastic methods are still preferable at present, for example in the design of suspension bridges, thin shells, structures subject to fatigue type loads, brittle materials, etc.

There will not be drastic changes in either steel or reinforced concrete construction as a result of these new design methods. The most glaring deficiencies of elastic stress methods have already been overcome by empirical corrections in current design practice. The appearance of buildings, the methods of framing, etc. will be little affected. These new design methods are new and more effective tools for the structural engineer, but they do not eliminate the fundamental requirements for imagination, good judgment and intelligently evaluated experience on which good and creative design is always based.

Charles Payne

AIR COOLING FOR EQUIPMENT AND PEOPLE

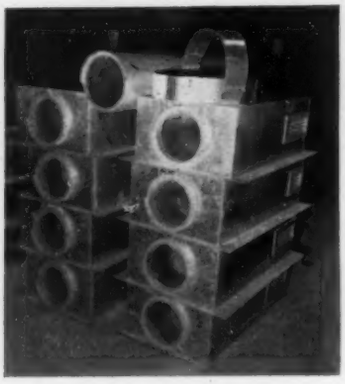
Two duct systems satisfy widely different requirements in a telephone building, from normal office air conditioning to equipment cooling, which may change at a later date, with loads ranging from 10 even up to 140 watts per square foot

MOST NEW BUILDINGS have air conditioning for people's comfort, and in this electrical age, more and more will have to provide air cooling for proper operation of communications equipment, electronic brains and similar apparatus. For example, heat given off by the equipment in the new Long Distance Switching Center in Wayne, Pa. for the American Telephone and Telegraph Company varies from 10 watts per sq ft to a staggering figure of over ten times that amount — 140 watts per sq ft — whereas in an average office building the total electrical load is only about 8 watts per sq ft. This newly completed, five-story building, designed by Lorimer and Rose, Architects and Engineers, is completely air conditioned: the first three floors are designed to accommodate the equipment and the top two are for office personnel. While such a large scale cooling problem as this might not be encountered too often, there are some ideas to be gained from the way the problem was handled here, where the emphasis was on flexibility, simplicity and ease of construction and appearance.

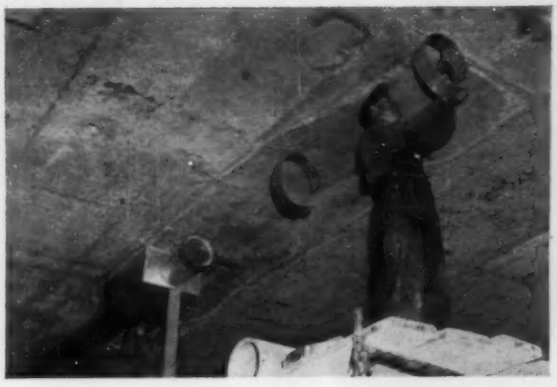
In this switching center, Richard P. Goemann developed for William A. Rose Associates, Consulting Engineers, a completely new modular, round duct system for the equipment floors, and designed an air radiant-convection system for the office floors.

What were the physical requirements that made these systems logical solutions? Taking the equipment floors first, a cooling system was desired — for most of the area — that could handle cooling loads from 10 to 40 watts per sq ft, that would be flexible enough to handle a completely different cooling load pattern as equipment is added or changed without complicated and expensive

ROUND DUCT SYSTEM

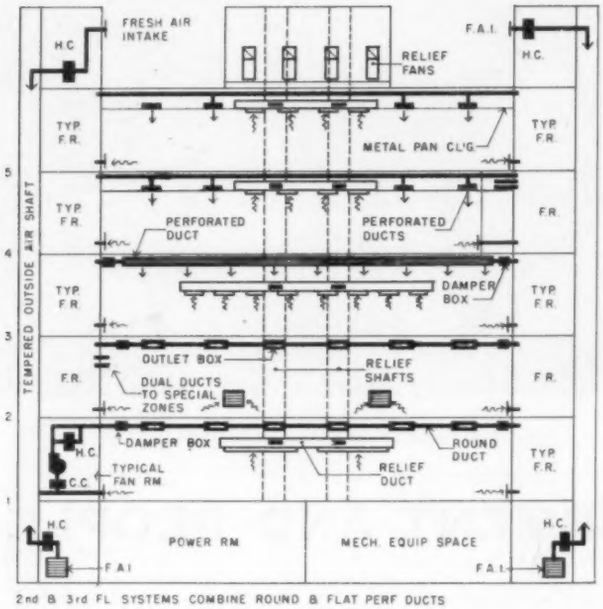


A duct, outlet boxes and strap

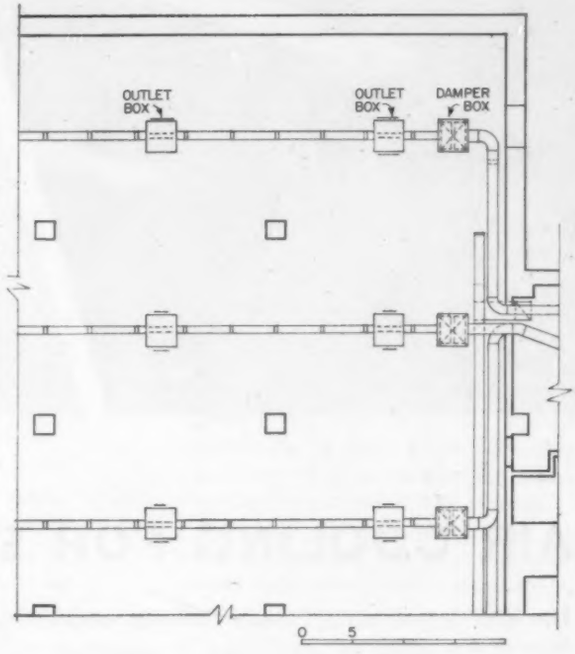


Metal gasket-straps are fastened to inserts in concrete slab

An outlet box is lifted into position



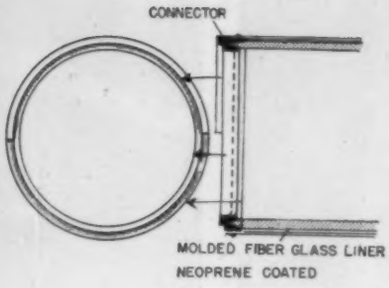
2nd & 3rd FL SYSTEMS COMBINE ROUND & FLAT PERF DUCTS



changes in ducts, that would have a duct network providing a neat appearance when left exposed, that could be fed from two separate cooling sources so that in case one failed temporarily, there still would be partial cooling provided by the other.

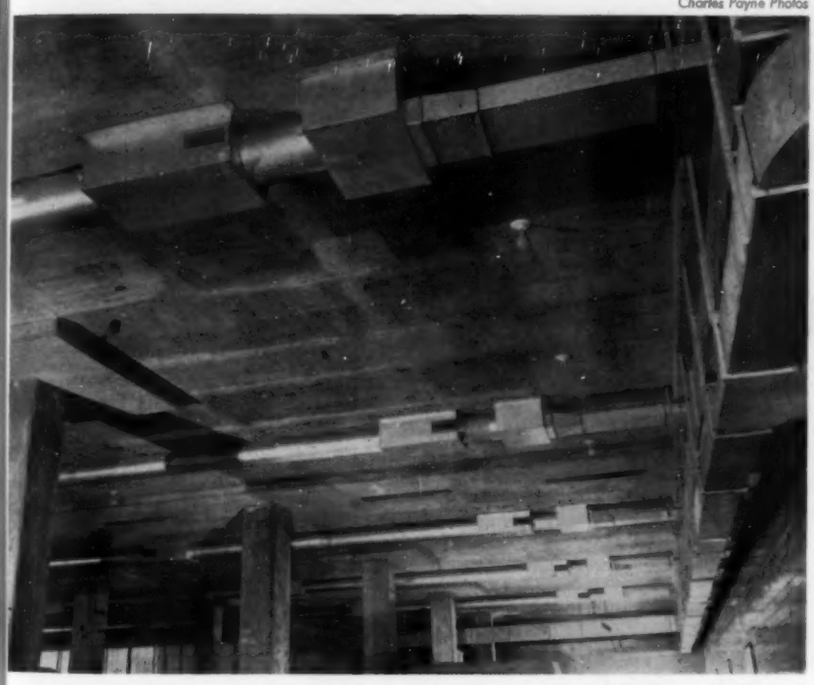
The system that was developed consists of a series of 11-in. o.d. round ducts, five sections per 22-ft, 3-in. bay, carrying air at a velocity of 3500 ft per minute. The air is fed from standard, rectangular ducts on two sides of the room first into primary pressure and volume reducing boxes, and from there into the round ducts which are connected to outlet boxes in each bay. Each outlet box supplies one bay, from two openings on opposite sides. Dampers within the box permit the two openings to be adjusted separately so that there might be, say, 350 cfm from one side and 100 cfm from the other. The ducts are sheet metal, covering $\frac{5}{8}$-in. molded fibrous glass liners for acoustical and thermal insulation. They were given a smooth coat on the inside for treatment against the effects of high velocity air. One feature of the round duct is a reinforced plastic connector which provides an air tight seal and flush joints for minimum frictional resistance, and at the same time makes rapid installation possible (see detail). The ducts are tied to each other and suspended from the concrete floor slab above by means of metal strap gasket-hangars. No special duct construction is required on the job and the work can be handled by a two-man crew. At any time an outlet box can be dropped out or added because of the connector detail and strap hangar arrangement.

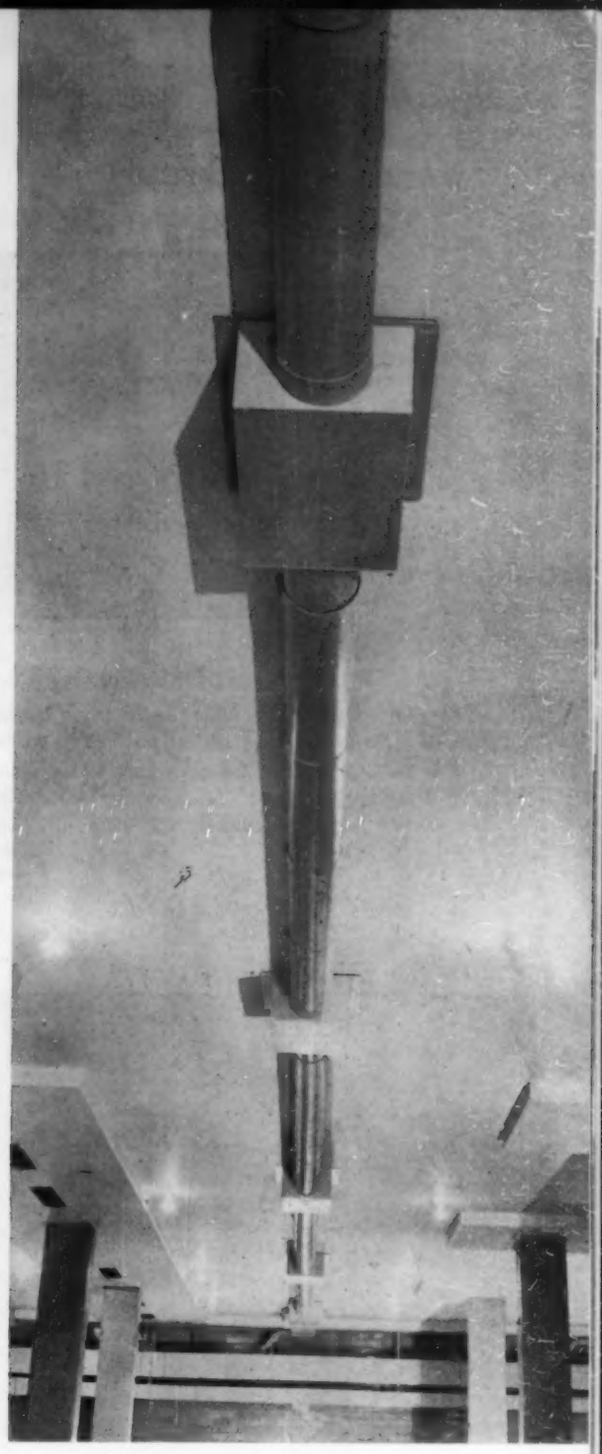
One important advantage of the round duct system is the possibility of having



Airtight fit is made between outlet box and duct by connectors and strap

Charles Payne Photos





a uniform size of duct throughout, for ease of assembly and clean-cut appearance, due to the wide range of control provided by the outlet boxes. (In fact, when used in other types of buildings, a hung ceiling would not be necessary.) Even at the end of a duct run there is still a greater volume of air available than there would be with gradually reduced-in-size rectangular ducts, designed this way so as to give uniform supply at each outlet.

In addition, by having a multiplicity of outlets over the floor area, draftless distribution is achieved.

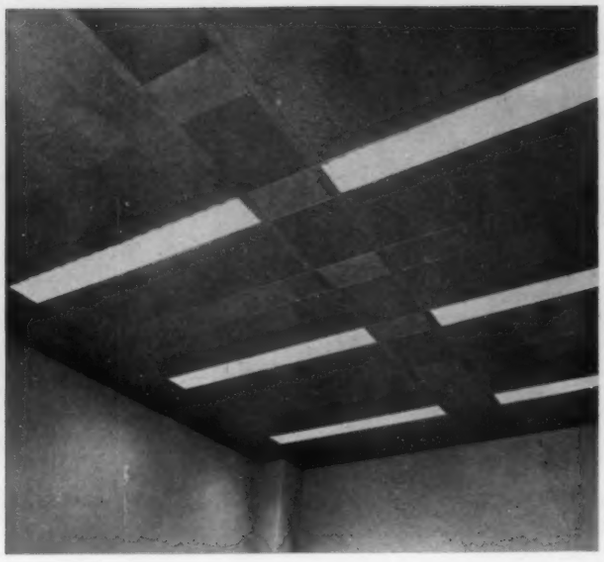
The designer points out that the outlet box in this particular building should be considered a utility model, and that other shapes would be feasible if the system were to be used in commercial space.

The first floor of the building is air conditioned completely by means of the round duct system. On the second and third floors there are some high-cooling load areas (140 w/sq ft) which are cooled by flat ducts, 24- and 26-in wide having perforated pans on the bottom. (On the second floor there is one 36- by 10-in. duct, the middle third of which has the perforated bottoms. On the third floor there are five 24- by 10-in. ducts 130-ft long with perforated pans the whole length.) Also there are some smaller rectangular ducts serving special areas. On the equipment floors, 100 per cent exhaust and fresh air can be employed at times during the winter to furnish all the cooling that is needed. Relief ducts at the front of equipment floors connected to a relief air shaft remove the waste air.

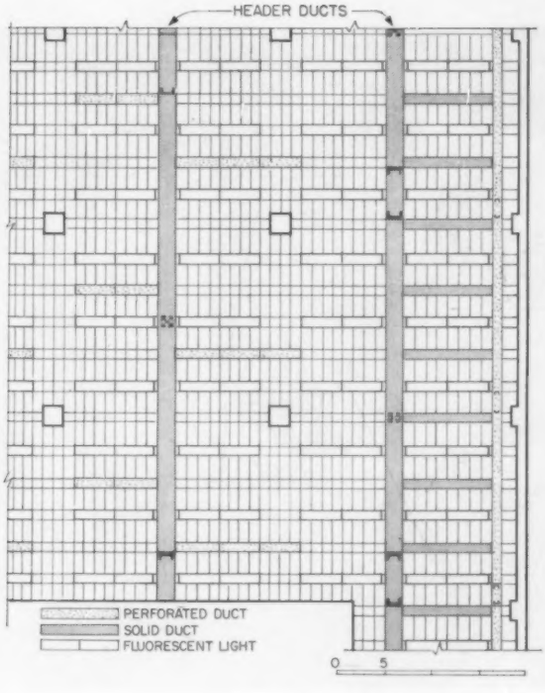
On the office floors a different approach was called for. Here in addition to comfort cooling there had to be a

METAL PAN SYSTEM

Charles Payne



Air for conditioning office areas is distributed through header ducts with solid metal pan bottoms to branch ducts with perforated pans, admitting air to the room. In high load areas, long ducts (below) either 24- or 36-in. wide, and with perforated pans handle loads up to 140 w/sq ft



fairly high level, but glare-free, lighting system and sound-absorbent acoustical treatment. All of these features could be integrated in a metal pan ceiling by using strips of perforated panels either for air diffusion or backed by batt insulation for sound absorption, and with spaces left for recessed fluorescent fixtures having parabolic shaped reflectors. Here's the way it works: Solid-bottom metal pans topped by inverted "U" shaped covers form headers which supply other branch ceiling ducts which have perforated bottom panels. They have various lengths and frequency of repetition in the ceiling, depending on the particular cooling load.

Advantages of this ceiling system include the following:

1. The ducts form part of the ceiling, either with solid or perforated bottom.
2. Various degrees of cooling load can be handled merely by providing more panels in the form of ducts.
3. The ceiling appearance is not affected in the slightest when more duct area is needed.
4. Some panel heating and cooling effect is experienced, providing a greater sense of comfort.
5. Perforated panels can be interchanged with solid panels, allowing a wide range of flexibility in air distribution.
6. The panels may be removed easily for service.

Even where there may be small areas with high cooling load, this can be handled by substituting a ceiling register for a perforated panel.

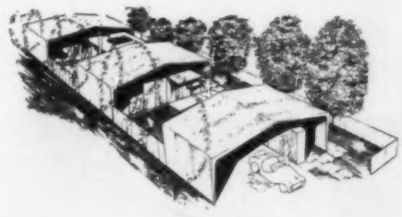
The metal ceiling system had its first large application in the A. T. & T. Long Lines Switching Center in White Plains, N. Y. also designed by Lorimer and Rose.

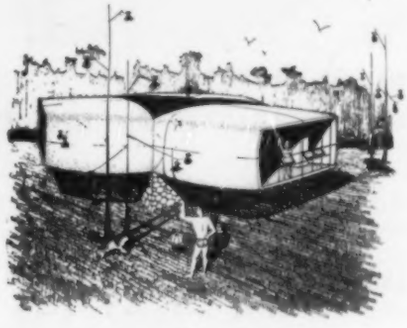
PLASTICS — SHAPING TOMORROW'S HOUSES?

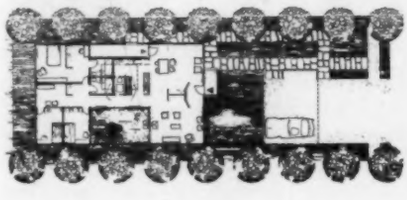
A SLIGHT ALTERATION in the subject theme of the Seventh National Plastics Exposition — which should actually read "Plastics — Shaping Tomorrow's Products" — mirrors the concentration at the show on plastics in residential construction. The biggest plastics show ever — and held at the big New York City Coliseum — it attracted well over 330 informative exhibits and thousands of visitors. Residential highlights of the Exposition were the announcement of the winners of the SPI Plastics House Competition and unveiling of the Monsanto model "House of Tomorrow."

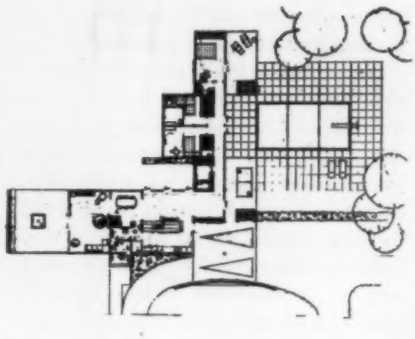
PLASTICS HOUSE COMPETITION WINNERS

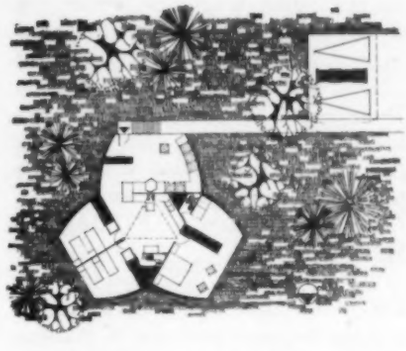
Thirteen prize winners were named in the Plastics House Competition sponsored by The Society of the Plastics Industry, Inc. Awards were made in categories ranging from over-all design for small homes not more than 1600 sq ft in area to designs for featured living spaces such as bathrooms, playrooms, outdoor living or porch areas. The jury consisted of architects John N. Highland, Jr. of Buffalo and Paul M. Rudolph of Sarasota, Fla., and editor Hiram McCann of *Modern Plastics*. Professional advisor was James T. Lendrum, AIA, of the Small Homes Council.











First Prize — William Goodwin, M.I.T. Architecture Student

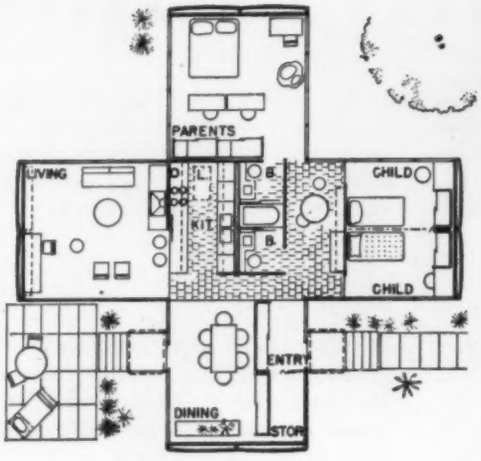
Fiberglas-reinforced polyester bents are joined in the middle with steel bolts and neoprene gasketing. After being fastened the bents form the structural support of the house and span 34 ft without interior support. The bents can be nested for easy shipment. The plastic shell is completed with foamed polystyrene insulation sandwiched between hard, scratch-resistant surfaces which contain electric radiant-heating coils. Stressed-skin panels of reinforced polyester skin and polystyrene web span 16 ft in the central utility core between the living and sleeping areas. Other plastic features include lightweight molded kitchen cabinets in 2-ft modular units and molded bathroom fixtures.

Second Prize — Hermes & Colucci, Cincinnati Architectural Firm

Four identical hyperbolic paraboloid roof units of ⅛-in.-thick fiberglas-reinforced polyester are joined to form one 20- by 20-ft span which can be supported by a single column or by other roof units. Supporting column incorporates a central roof drain. The units can be arranged in a variety of combinations. Automatically operated louvers made of a reinforced plastic skin over a foam core are located under the roof units. These adjustable louvers reflect summer sun and open to admit winter sun. Plastic sandwich panels are used for walls. Plastic panels enclose the pool and patio for year-round use. Hyperbolic paraboloid roof units over the pool slide on nylon rollers to provide shade areas.

Third Prize — John Dyal, M.I.T. Architecture Student

Each of three cantilevered wings consists of four L-bents of reinforced plastic around isocyanate foam which are joined together and to the adjacent wings. The seam joint on top is held by a tension triangle of reinforced plastic around the perimeter of the central triangular core of the house. This is lighted from above by four triangular translucent plastic domes. The wings are cantilevered out from a foundation which can be of native stone, concrete, brick or block. A featured area of the house is a one-piece molded plastic bathroom. Reinforced plastics are used for interior partitions, doors, fixtures and furniture as far as it is consistent with the nature of the material.



HOUSE OF TOMORROW

A dramatic moment at the Exposition was the unveiling, by Walt Disney, of a model of the Monsanto Plastics House (AR, Jan. '56, p. 205). Designed by architect Marvin Goody as part of a plastics research project under the direction of Richard Hamilton and sponsored by Monsanto at M.I.T., the "House of Tomorrow" will be built at Disneyland in Anaheim, Calif. Construction will start late this year. Following is a structural evaluation of the house which was prepared by Albert G. H. Dietz, F. J. McGarry and F. J. Heger of M.I.T.

Design of a "House of Tomorrow," embodying the maximum use of plastics, has been undertaken to see how plastics can most advantageously be employed in a house designed from the outset to utilize plastics as plastics rather than as substitutes for other materials. Architectural and engineering design have been closely related from the beginning to attain this objective. A major consideration is the fact that plastics can be formed rather readily into large compound curves, that such curves are structurally efficient and that structure and enclosure can be combined to allow plastics to perform a double function, thereby making the material perform to its utmost.

The house has a cross-shaped plan consisting of a 16-ft-square central area and four 16-ft-square wings. The central area is supported by four columns resting on a foundation. The wings are cantilevered from the central section.

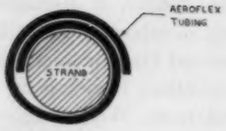
To meet shipping restrictions, the roof and floor are made of 8-ft by 16-ft molded reinforced plastics sections. Both are hollow shells whose exterior portions are identical in shape and are therefore all made on the same mold. Sixteen such sections are required. The floor itself forms the inner portion of the floor shell, and is a sandwich with reinforced plastics faces and either a honeycomb or foamed polyisocyanate core. Floor and roof shells are made deep enough to develop the necessary stiffness. The ceiling or inner portion of the roof shell is curved for best lighting as well as for structural efficiency in resisting compressive buckling stresses.

In the central section direct tensile and compressive stresses have to be transmitted from wing to wing, and bending stresses must also be resisted because of floor loading. Two sandwiches form the structure of the central section. An upper one carries floor loads in bending plus direct tensile stresses from the wings. A lower one resists the compressive thrusts from the wings. Similar structural sandwiches in the roof of the central section carry the tensile and compressive thrusts from the roof shells. A series of spandrels and intermediate ribs helps to support the loads and to provide stiffness. The load analysis required a study of dead loads alone, live loads over-all, live loads distributed over individual wings, wind loads uniform on entire house, wind loads unequally distributed because of differences in exposure, and earthquake.

Design throughout was concerned more with stiffness than with strength. If deflections were held within generally accepted bounds for building, stresses were usually well within allowable limits. By tying wings and central sections together, and by connecting the outboard ends of roof and floor shells, maximum resistance to deflection and torsion was obtained.

Columns, which carry only direct downward or uplift loads and can therefore be made slender, are sunk down to a reinforced concrete foundation slab and stiffened in the foundation area by large gussets made integral with the floor spandrels.

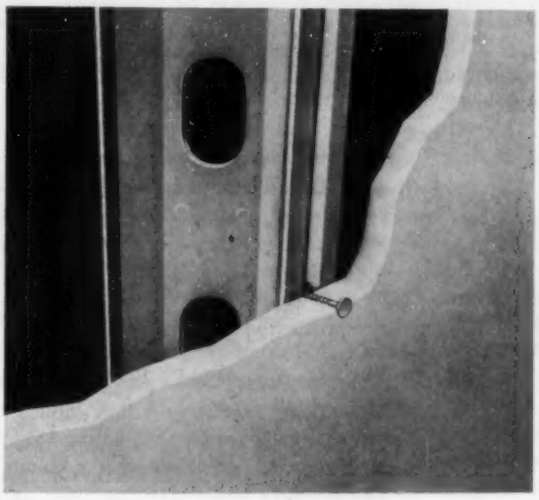
A "House of Today" was on display at the B. F. Goodrich Chemical Co. booth in a full-scale cutaway showing a living room, kitchen, utility room, patio and even a section of the "house next door." Designed by Cleveland architect J. Trevor Guy, AIA, the house exhibited a variety of residential applications of vinyl products. Rigid vinyls, a relatively new development, accounted for many of the elements in the house, including piping, ductwork, window frames, gutters and downspouts, lighting panels, roofing, sliding door channels and house siding. (*Continued on page 222*)

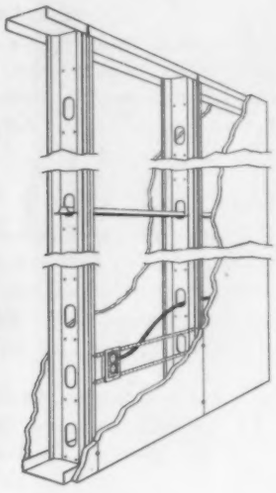


PLASTIC TUBING FOR PRESTRESSING STRANDS

AEROFLEX PLASTIC TUBING has been developed to prevent bond in certain prestressing strands in concrete structures. Desired stress distribution pattern is attained by partial covering of several strand sections. Partial covering prevents excessive stress in that part of the beam close to the anchorage and support points of the structure, while permitting maximum stress in the center of the structure. The tubing, shown in cross section above, is an open tube with an overlap of about one-half the circumference. It is applied over the strands by opening it and walking it along the strand, as shown in the photo at right. The overlap, which is installed with the outside end pointing downward, prevents the ingress of concrete and water. No taping or tying is required to hold the tube in place on the strands. *Anchor Plastics Co., 36–36 36th St., Long Island City 6, N. Y.*

STEEL STUDS AND TRACKS SECURE PANELS OF NON-BEARING PARTITIONS





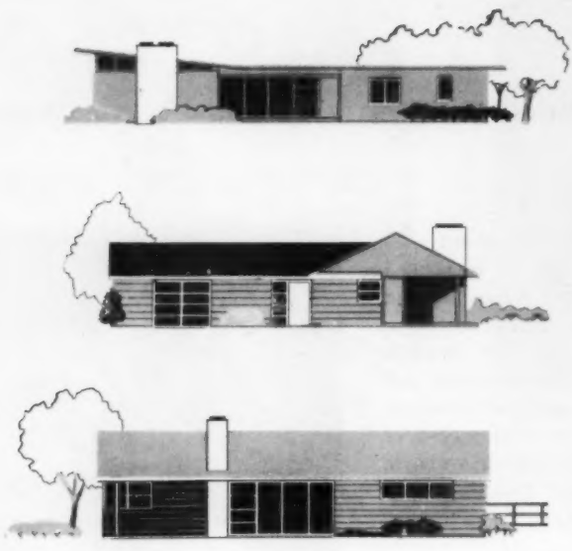
PERMALOK SYSTEM for low-cost erection of non-bearing partitions consists of nailable steel studs, track and bridging to which such collateral materials as metal or gypsum or almost any type of panel can be secured by nails or screws. The studs are made in two sizes, 2½ and 3⅝ in. The larger size is punched with openings for the passage of pipe and conduit and the attachment of bridging members, as shown at left. Bridging members are furnished in two lengths, for stud spacings of 16 and 24 in. Track sections are sized to fit over the flanges of the studs. *Penn Metal Co., Inc., 205 East 42nd St., New York, N. Y.*

NEW HARDWARE AVAILABLE FOR GLASS DOORS

MAXIMUM SECURITY 1850 is a compact narrow-stile deadlock devised for use in swinging glass doors. It is said to overcome all the weaknesses of narrow-stile construction caused by play in the hinges, flexible channels and jambs and inaccurate installation. It does this by retaining as much bolt within the lock stile as is projected. From a backset of only ⅞ in., the bolt throw is 1⅜ in. *Adams-Rite Mfg. Co., 540 West Chevy Chase Dr., Glendale 4, Calif.*

DESIGNED EXCLUSIVELY for Arcadia steel- and aluminum-framed sliding glass doors, the new door pulls shown at far right are available in dull chrome, dull bronze and dull black. Patterned metal inserts are available in Alumilite finish or black. *Arcadia Metal Products, 801 S. Acacia Ave., Fullerton, Calif.*

(*More Products on page 232*)



CONTEMPORARY FARMHOUSES

Flexiplan 71204 is a guide to planning farmhouses which resulted from research by the Illinois Experiment Station under project NC-9 of the North Central Region. Organized in a spiral binder, it discusses the factors involved in planning farmhouses under the following headings: The House and Its Surroundings, The House on the Farm, Construction, Deciding on a Basement, Footings and Foundations, Wall Construction, Roof Construction, Interior Construction and Finish, Household Storage, Window Selection and Placement, Outside Construction, Ventilating, Air Conditioning and Heating, Central Heating, Utilities and Equipment, Lighting and Wiring, Outdoor Planning and Planting. Perhaps the most valuable section of the book is the Flexiplan, in which are presented 24 divided sheets of plan sections for combination in any variety. A total of 576 house-plan combinations is available, with still more variations possible in alternative choices of basements, garages and porches. Prepared by M. R. Hodgell under the direction of the Farmhouse Technical Committee NC-9 of the North Central Region and published by *The University of Illinois Press, Urbana, Ill.*

Garden Lighting Equipment

Bulletin 135-56 describes the *Floralite* line of garden and play area equipment, including portable and permanently mounted types. 4 pp. *Steber Mfg. Co., Broadview, Ill.*

Weisway Cabinet Showers

(AIA 35-H-6) Describes the complete line of Weisway cabinet showers, with a full section devoted to built-in models. *Henry Weis Mfg. Co., Inc., Elkhart, Ind.**

Interior Masonry Walls (AIA 25-C)

File folder contains descriptive sheets on *Primafil* simultaneous priming and filling for concrete, cinder and other aggregate block. *Pratt & Lambert, Inc., Architectural Service Dept., 75 Tonawanda St., Buffalo 7, N. Y.**

School Lighting Plan

An ideal school lighting and floor plan, showing a room-by-room breakdown of the school and the proper lighting for each room, is available from *The Art Metal Co., Cleveland 3.**

Attic Fans

Bulletin 7514 presents the new Model CA Ventura attic fans for residential cooling. 4 pp. *American Blower Corp., Detroit 32, Mich.**

Contact Metal Lath Ceilings

(AIA 20-B-1) Technical Bulletin 17 discusses metal lath as it is attached directly to the underside of concrete, steel and wood. 4 pp. *Metal Lath Mfrs. Assn., Engineers Bldg., Cleveland 14.**

Simplex Ceiling

Introduces *Soft-tone* color anodized aluminum acoustical ceiling panel. Contains details of suspension, installation and integration with recessed lighting. 4 pp. *Simplex Ceiling Corp., 552 W. 52nd St., New York 19.**

Glass

Illustrates the use of carved and sandblasted glass in fenestration of public buildings, churches, schools, restaurants, hotels and ships. 8 pp. *Rambusch, 40 West 13th St., New York 11, N. Y.*

Glazing and Sealing Problems

(AIA 26-B-2) Examines the problems of glazing and sealing lights of glass as large as 66 by 112½ in. Lists 14 necessary precautions. 8 pp. *The Tremco Mfg. Co., 8701 Kinsman Rd., Cleveland 4, Ohio.**

Color Engineering Service

Describes professional color engineering service available to architects and shows how scientific selection of colors promotes efficiency, safety and economical maintenance in buildings. 6 pp. *Cook Paint and Varnish Co., Color Engineering Service, P.O. Box 389, Kansas City 41, Mo.**

America's Most Desired Kitchen

Spiral-bound catalog features sink cabinets, wall cabinets, utility cabinets, base cabinets, counter tops, accessories and specialty cabinets. *Harrison Steel Cabinet Co., 4718 West Fifth Ave., Chicago 44, Ill.*

Refrigerators (AIA 30-F-6)

File folder includes a variety of brochures describing commercial refrigerators manufactured by *The C. Schmidt Co., 1712 John St., Cincinnati 14, Ohio.*

Hospital Laundries

Spiral-bound notebook gives basic background and planning information for setting up laundries for hospitals. Includes general layouts for hospitals from 25 to 300 beds. 32 pp plus layouts. *The Prosperity Co., Inc., Syracuse, N. Y.*

Water Hammer (AIA 29-D-8)

Manual S describes water hammer, presents methods for eliminating it and gives data on shock absorbers. Manual LV presents adjustable top floor and roof drains. *Josam Mfg. Co., Michigan City, Ind.**

Creative Playthings

Shows a variety of creative equipment for children and lists consultants in a number of specialty fields. 8 pp. Catalog of play sculptures also available from *Creative Playthings, Inc., Herndon, Pa.*

Perforated Metals

Catalog 62 presents information about sheet sizes, type and gauge of metal and per cent of open area for industrial and decorative perforated metals. Patterns are illustrated at actual size. 6 pp. *The Harrington & King Perforating Co., Inc., 5624 Fillmore St., Chicago 44, Ill.**

**Other product information in Sweet's Architectural File, 1956.*

(More Literature on page 274)

Meeting the architect's concept

Price Tower:
Bartlesville, Okla.

Architect:
Frank Lloyd Wright

Engineer:
Mendel Glickman

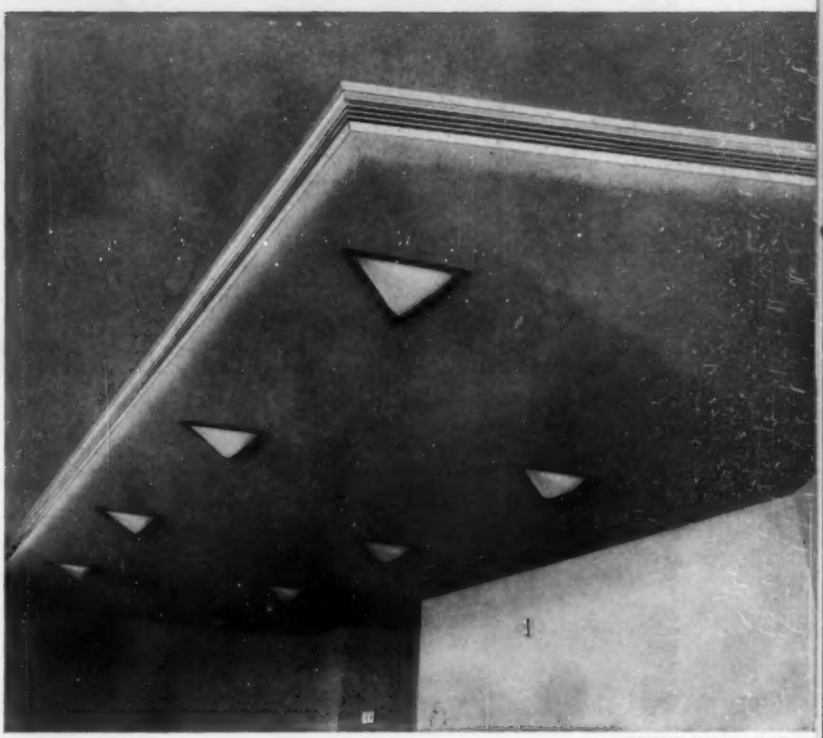
Consulting Engineers:
Collins & Gould

General Contractor:
Culwell Construction Co.

High velocity air diffusion in the Price Tower

The photograph at the right shows how Mr. Frank Lloyd Wright incorporated Anemostat Straight Line All-Air High Velocity Units in the ceiling design of the Price Tower at Bartlesville, Oklahoma. The conditioned air is supplied through continuous Straight Line Diffusers located on two sides of the suspended ceiling. The diffusers do not only have vital functional use, but also add to the esthetic appearance of the architect's design.

The Anemostat All-Air High Velocity distribution system also offers important advantages. It can be used with smaller than conventional ducts. It can be installed in less time and at less cost. It requires no coils, thus eliminates leakage, clogging and odors. Furthermore, Anemostat round, square and straight line diffusers with high velocity units are adaptable to a wide variety of architectural designs.



PHOTOS: JOE D. PRICE

See how Anemostat Straight Line All-Air High Velocity units are used in a typical office area.

Write for "High Velocity Air Conditioning: Its Effect on Building Design" to Anemostat Corporation of America, 10 E. 39 Street, New York 16, N. Y.

Anemostat—The Pioneer of All-Air High Velocity Systems

AC 1340

Lemon Hill, in Fairmount Park, Philadelphia, one of the most graceful facades in America, was visited frequently by Washington, Hamilton, Lafayette and Jefferson.

Double Hung Wood Windows Add Grace to the Beautiful Exterior of Lemon Hill

Relative inexpensiveness permits generous use of double hung wood windows with metal weatherstripping, even in the most modern homes.

An endless variety of design can be achieved with double hung wood windows. They are easily shaped and their surface receives and holds any type of finish.

From 1770 to 1798 Lemon Hill was the home of Robert Morris, one of the most famous financiers of the Revolution, member of the Continental Congress and signer of the Declaration of Independence. Morris filled his hot houses with what were said to be the first lemon trees brought to Philadelphia, giving the mansion its name.

Double hung wood windows add grace and dignity to Lemon Hill mansion, just as they do to modern homes. Other materials cannot hope to duplicate the warmth and versatility of wood. Also, today, with the advancement of modern chemistry, the natural durability of wood windows has been greatly increased through preservative treatment—further assuring rugged endurance in all kinds of weather.

Another plus factor for double hung wood windows is the use of modern spring sash balance and metal weatherstripping. The extraordinary durability of metal weatherstripped double hung wood windows means less maintenance and longer life.

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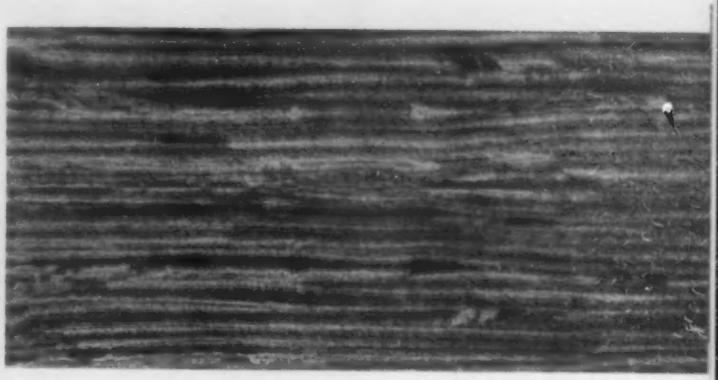
FINE HARDWOODS FOR ARCHITECTURAL USES — 7

By Burdett Green, Executive Vice President, Fine Hardwoods Association and James Arkin, A.I.A., Consultant, Architectural Woodwork Institute

BUBINGA *(Guibourtia demeusii)*—African Rosewood, Akume, Kewazinga

Source: West Africa
Color: Red with streaks or lines of ornamental dark purple
Pattern: From a rather plain stripe to a heavy mottle which occurs in the quarter-cut wood. Occasionally cut sliced and half-round
Characteristics: Very hard. While described as having a close grain, it has conspicuous and fairly large pores. Capable of being worked into fine cabinetry
Uses: General cabinetry
Availability: Plentiful in the form of veneers. Largely produced as longwood, but occasionally as crotches and swirls
Price Range: Medium to costly



Bubinga, quartered (2 pieces, book-matched)

CEDAR, AROMATIC RED *(Juniperus virginiana)*—Eastern Red Cedar, Juniper, Pencil Cedar, Red Cedar, Southern Red Cedar, Tennessee Red Cedar

Although Cedar is not one of the hardwoods, since it is a coniferous or needle-bearing tree rather than a "broad-leaf," which generally depicts hardwoods, this species is commonly produced by the hardwood industry. It is a very fine-textured wood which is used extensively along with hardwoods by the cedar chest industry and also for lining interiors of closets and cabinetry to be used for storage.

Source: Occurs over most of the eastern two-thirds of United States. Largest production in Southeastern and South Central States
Color: Light red with streaks of light sapwood
Pattern: Knotty, with other natural characteristics always present
Characteristics: Although brittle, it is regarded as a fine wood to work
Uses: Cedar storage chests; linings of closets and chests; small articles of woodenware
Availability: Veneer (sawn or sliced) plentiful; lumber plentiful, both in rather small sizes
Price Range: Medium

Cedar, Aromatic Red (3 pieces, unmatched)

ELM, AMERICAN *(Ulmus americana)*—Soft Elm, Water Elm, White Elm

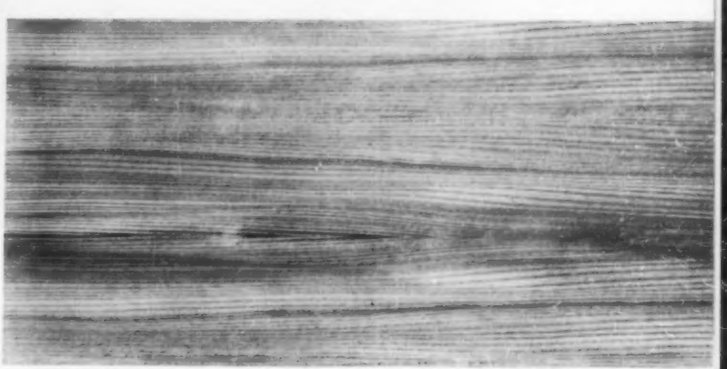
Although there are several varieties of Elm that vary but slightly in character, the two commonly available types are Northern Brown Elm and Southern Elm.

Source: United States, east of the Rockies
Color: Light brownish
Pattern: Conspicuous growth pattern, like Ash
Characteristics: Heavy; hard; strong; tough; difficult to split; coarse-grained; bends exceedingly well
Uses: Widely used as veneers for containers; some for furniture. Although for years the most widely used wood for berry baskets and other containers, less of it is used for that purpose today and more of it is cut into veneers and lumber for both architectural plywood and fine furniture
Availability: Veneer (quartered, sliced, rotary) plentiful. Lumber available
Price Range: Medium

Elm, Northern Brown, flat cut (2 pieces, book-matched)

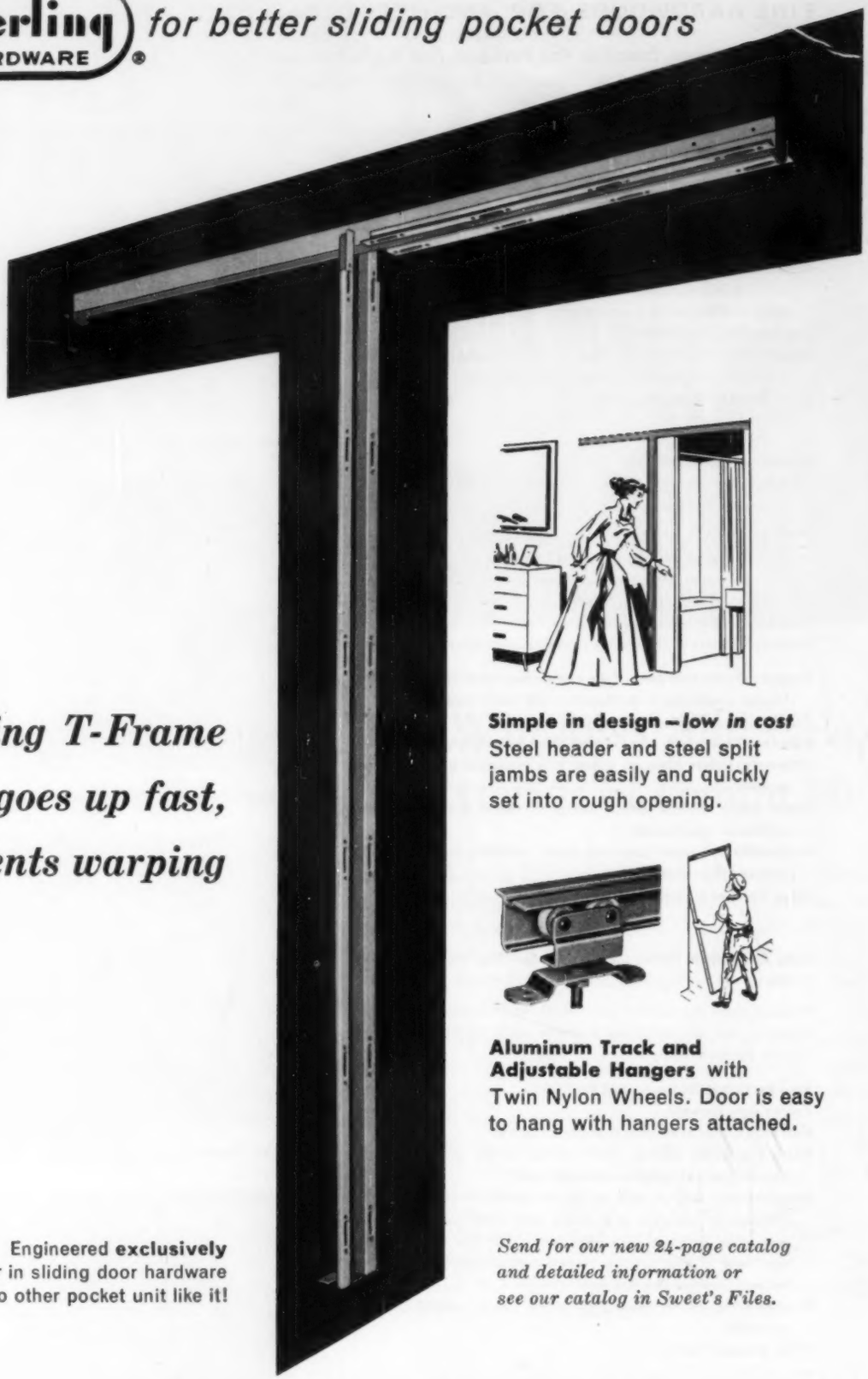
ELM, CARPATHIAN BURL *(Ulmus campestris)*—English Elm

Although not pictured here, it is a type of true Elm described as Carpathian Elm Burl and was rather widely used in the furniture and fixture trade during the 1920's. Although an especially highly figured burl, it is usually quite defective and is rarely used today.



Elm, American, quartered (3 pieces, book-matched)

Sterling HARDWARE® *for better sliding pocket doors*



Sterling T-Frame goes up fast, prevents warping

Simple in design—*low in cost*
Steel header and steel split jambs are easily and quickly set into rough opening.

Aluminum Track and Adjustable Hangers with Twin Nylon Wheels. Door is easy to hang with hangers attached.

Engineered **exclusively** by the leader in sliding door hardware —no other pocket unit like it!

Send for our new 24-page catalog and detailed information or see our catalog in Sweet's Files.

John Sterling Corporation

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FINE HARDWOODS FOR ARCHITECTURAL USES — 8

By Burdett Green, Executive Vice President, Fine Hardwoods Association and James Arkin, A.I.A., Consultant, Architectural Woodwork Institute

GUMWOOD *(Liquidambar styraciflua)*

For years Gumwood has been one of the most widely used hardwoods in the furniture and woodworking industries. For many years it was extensively used for interior trim and woodwork, especially in areas to be painted. In certain sections of the country it was commonly finished natural. Today Sap Gum is most frequently used in a lumber form for the structural parts of furniture carrying plywood surfaces of other woods. Sap Gum, too, is widely used for the inner plies of "bonded" or plywood construction. Heartwood and sapwood are sold separately as Red Gum and Sap Gum.

GUM, RED *(Heartwood)* —Hazelwood, Southern Gum, Sweet Gum

Source: Wide range in the United States, but commercial production largely from lower Mississippi Valley
Color: Reddish-brown
Pattern: Dark streaks
Characteristics: Moderately heavy; hard; straight; close-grained; not exceedingly strong. Often selected for its attractive figure
Uses: Outside and inside finish of houses; cabinetry
Availability: Veneer (sliced, rotary) plentiful. Lumber available
Price Range: Medium

GUM, SAP *(Sapwood)*

Source: Same as Red Gum
Color: Pinkish-white, often blued by sap stains
Pattern: Plain but not strong; usually watery
Characteristics: Same as Red Gum except not as durable
Uses: Plywood (interiors) and lumber for furniture; architectural woodwork for paint; most widely used species for veneers in the United States
Availability: Veneer (rotary) abundant. Lumber abundant
Price Range: Inexpensive

HAREWOOD, ENGLISH GRAY *(Acer pseudoplatanus)*—Sycamore

The name "Sycamore" is normally applied to this species in its country of origin, England. As noted by its botanical name, *Acer*, it is a true maple, and it is a great deal like our Northern Hard Maple. *Pseudoplatanus* further indicates that it is a false *platanus*, which is the botanical name of plane-tree or sycamore.

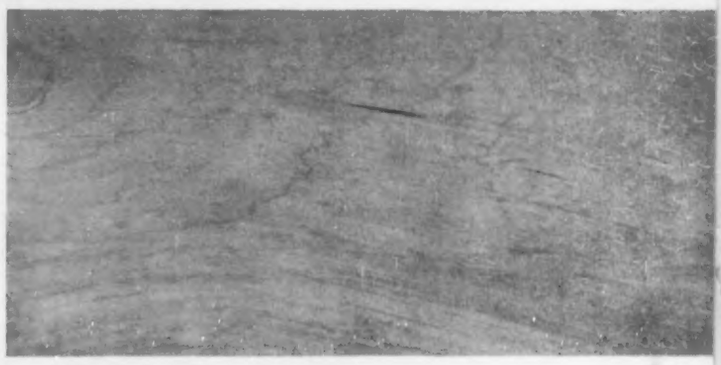
Source: England
Color: Natural white. Called English white before dyeing. Usually dyed silver gray
Pattern: Both plain and figured
Characteristics: Same as Maple
Uses: Marquetry; inlay; paneling
Availability: Veneer (quartered, sliced) scarce. Lumber available
Price Range: Costly

IREME *(Terminalia ivorensis)*—African Teak, Black Afara, Emeri, Framerie, Idigbo, Iroko

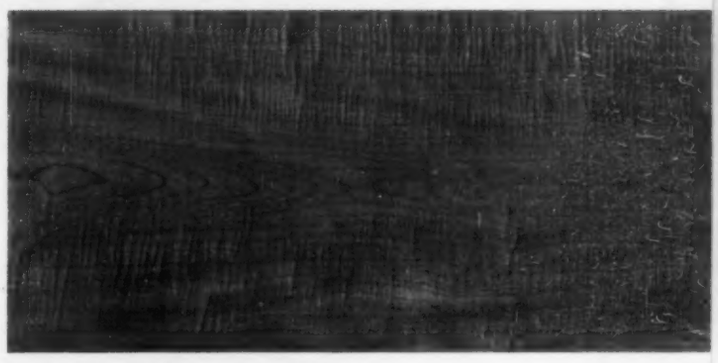
In the European trade this is a very valuable timber of a light grayish-brown color. The grain is firm and hard and the wood machines well. It has been used for many years in England and France, and limited quantities have been brought into the United States.

Source: Africa, Gold Coast
Color: Pale yellow to light brown
Pattern: Faint ribbon stripe with intermediate grain and noticeable rays
Uses: Panels and cabinetwork
Availability: Plentiful as veneers
Price Range: Moderate

Gum, Red, figured (2 pieces, book-matched)



Gum, Sapwood (1 piece)



Harewood, English Gray, figured (1 piece)

Ireme, mottled (1 piece)

CEILING OVER 40,000 FEET!

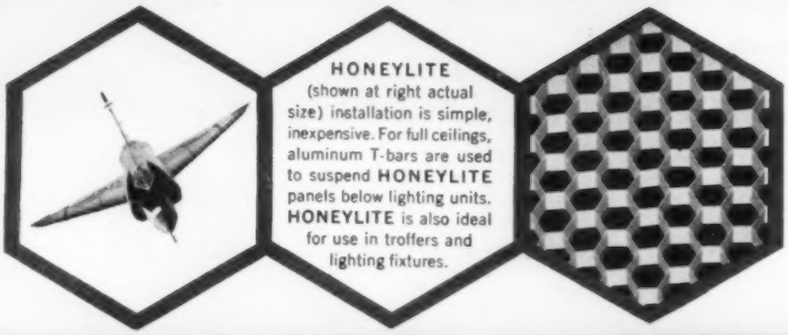
Convair's F-102A flies higher – faster – because HEXCEL aluminum honeycomb, used as core material in sandwich construction, lightens its load, smooths its contours, and raises its overall efficiency with the highest strength-to-weight ratio yet developed!

NATIONAL HOUSING CENTER — AUBINOE EDWARDS & BARRY A I A — KLUCKHUHN COBB & McDAVID ENGINEERING CONSULTANTS — WALTER TRULAND CORP. LIGHTING CONSULTANT

■ **HONEYLITE**, the versatile new lighting material, was selected to cover over 40,000 square feet of ceiling area in Washington, D. C.'s National Housing Center because it met all requirements – beautifully. Made of HEXCEL aluminum honeycomb, **HONEYLITE** diffused light so efficiently and so evenly that, without first checking with a light meter, many people couldn't believe the level of illumination was as high as 75 foot candles.* The second requirement – a louverall ceiling that would not interfere with air conditioning outlets located above it – was made to order for the unique nature of **HONEYLITE**'s hollow-celled construction. For these reasons, and for more listed below, specify **HONEYLITE** for your next lighting installation – it's the most beautiful, most functional, luminous ceiling you can find anywhere!

- 45° and/or 60° light cut-off provides effective shielding
- Non-flammable and UL approved
- Weighs less than three ounces per square foot
- Free circulation of air prolongs life of light units
- Provides lowest surface brightness obtainable
- Non-static and dust resistant
- May be cleaned with ordinary vacuum brush attachment

* See LIGHTING – December 1955



HONEYLITE
(shown at right actual size) installation is simple, inexpensive. For full ceilings, aluminum T-bars are used to suspend **HONEYLITE** panels below lighting units. **HONEYLITE** is also ideal for use in troffers and lighting fixtures.

HONEYLITE®

LIGHT-DIFFUSING ALUMINUM HONEYCOMB

A development of **HEXCEL PRODUCTS INC.**

951 SIXTY-FIRST STREET, OAKLAND 8, CALIFORNIA

FINE HARDWOODS FOR ARCHITECTURAL USES — 9

(To be continued in a later issue)

By Burdett Green, Executive Vice President, Fine Hardwoods Association and James Arkin, A.I.A., Consultant, Architectural Woodwork Institute

LAUAN or PHILIPPINE HARDWOODS

The Philippine Islands are the source of a great variety of hardwoods only a few of which are imported into the United States. The greatest volume comes from a group sold commercially as "Philippine Mahogany," although it is not related to the true mahoganies. Several fine hardwoods from the Philippine Islands and that part of the world are known and marketed under their own names, such as Narra, Almon, Bella-Rosa, Sonora and Paldao. Those classified and sold as Philippine Mahogany are quite varied in color and texture. They include the softer species of *Shorea*, which are light-colored to reddish-brown in color, and the species of *Parashorea* and *Pentacme*. This group is divided into two classes, as follows: (1) Red Lauan *(Shorea negrosensis)*, Tanquile *(Shorea polysperma)* and Tiaong *(Shorea spp.)*; (2) Almon *(Shorea almon)*, White Lauan *(Pentacme contorta)*, Bagtikan *(Parashorea picata)* and Mayapis *(Shorea squamata)*. In general, these woods, as compared with the Tropical American and African Mahoganies, are more coarse-grained and stringy. They require a greater amount of sanding to produce a finishing surface and are much less stable under atmospheric (moisture) changes. Pictured here are the less common type of Red Lauan showing butterfly pattern and the run-of-mine type of Lauan that is reaching this country today, which has a mild ribbon stripe and is nearly all quartered.

LAUAN, RED ***(Shorea negrosensis)***

Also called "Philippine Mahogany." Sold as Philippine Hardwoods.

Source: Philippine Islands
Color: Red to brown
Pattern: Ribbon stripe; interlocking grain
Characteristics: Coarse texture; large pores
Uses: Furniture; doors; cabinetry
Availability: Veneer (quartered, sliced, rotary) abundant. Lumber available
Price Range: Medium to inexpensive

LAUAN, WHITE **(Pentacome contorta)**

Same as above but for color.

NARRA ***(Pterocarpus indicus, Pterocarpus echinatus)***—Angsena, Sena

Although this wood is another one of the Philippine Hardwoods, it has properties distinctly superior to those described above.

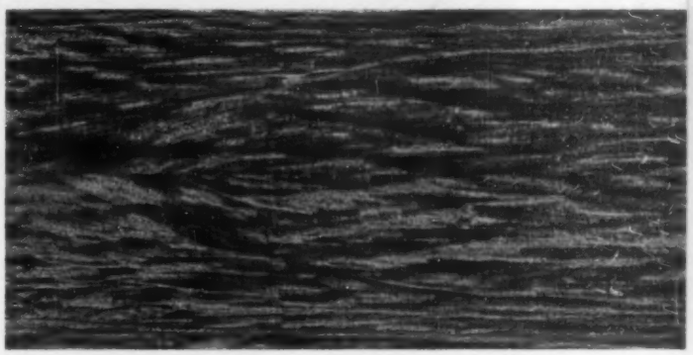
Source: Dutch East Indies, Philippines
Color: Rose to deep red. Some are golden yellow
Pattern: Distinct grain character; some ripple
Characteristics: Heavy and hard; not strong; durable
Uses: High-grade furniture; interior finish of ships and vehicles
Availability: Veneer (quartered) rare
Price Range: Costly

MAKORI ***(Mimusops heckelii)***—African "Cherry," Baku, Cherry "Mahogany," Makore

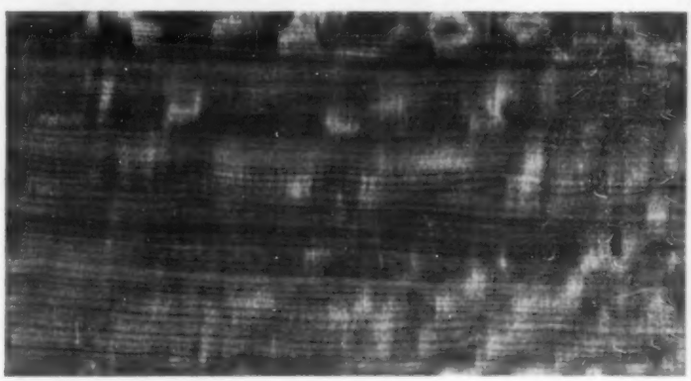
Source: African Gold Coast, Nigeria
Color: Pinkish-brown to blood red or red-brown
Pattern: Somewhat similar to a close-grained Mahogany, but with dark red growth lines and smaller pores, as found in Cherry. Some logs are straight-grained and show figure like African Mahogany stripes; others have a striking, checkered figure sometimes streaked with darker color
Characteristics: Finer textured than true mahoganies, and denser, harder and heavier; tough; stiff; large sizes; strong; gummy and lustrous; glues well; works fairly easily
Uses: Furniture and cabinetry
Availability: Veneer (quartered, sliced) plentiful
Price Range: Medium

Lauan, Red, flat cut (2 pieces, book-matched)

Lauan, White (2 pieces, slip-matched)



Narra, semi-figured (2 pieces, book-matched)



Makori, quartered, mottled (1 piece)

WINDOW TREATMENT IN A HOSPITAL

...BUILDS PATIENT MORALE

ONE WHOLE WALL OF EVERY ROOM IS MADE INTO A PICTURE WINDOW BY COMBINING CECO-STERLING ALUMINUM DOUBLE-HUNG AND FIXED WINDOWS . . .

The therapeutic value of sunshine and view had much to do in guiding Pereira & Luckman, planners, architects and engineers of Los Angeles and New York City, in designing the Grossmont District Hospital. To give patients a better outlook they made the whole side of each room into a wall of glass—a picture window bringing in sunshine and acres of view.

Ceco-Sterling Aluminum Double-Hung and Fixed Windows accomplished the desired effect. Maximum glass was possible because of slender sleeving mullions and narrow sash sections. And important, too, was the tight weather-seal provided by Ceco Windows. On your next building project, consult Ceco Engineers. They will help you make effective use of metal building products.

CECO STEEL PRODUCTS CORPORATION

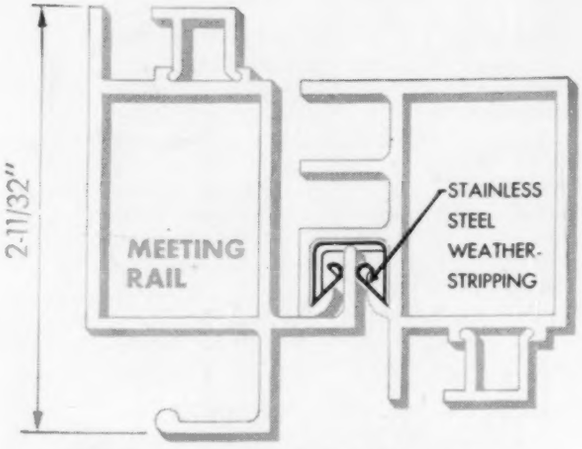
Offices, warehouses and fabricating plants in principal cities
General Offices: 5601 West 26th Street, Chicago 50, Illinois

IN CONSTRUCTION PRODUCTS CECO ENGINEERING MAKES THE BIG DIFFERENCE

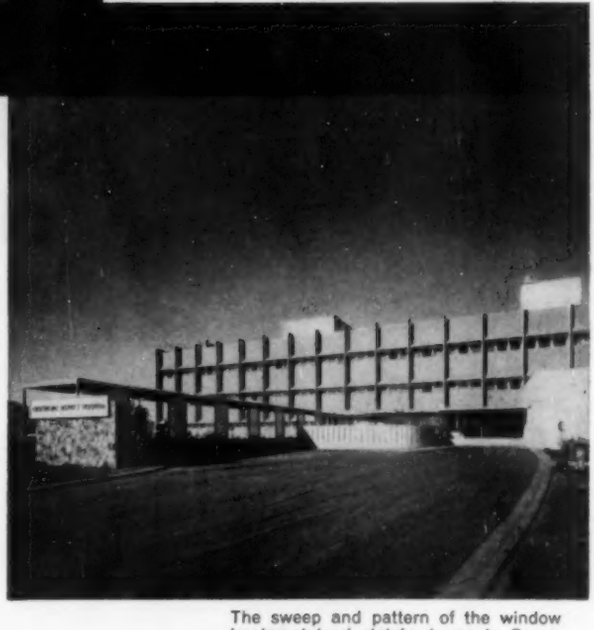
Windows, Screens and Doors / Ceco-Meyer Steelforms / Concrete Reinforcing / Steel Joists / Metal Roof Deck / Metal Lath

Front elevation of Grossmont District Hospital, San Diego, California presents interesting pattern of light and shade, with Ceco-Sterling Aluminum Double-Hung and Fixed Windows and Screens providing echo accents for the main motif. Pereira & Luckman, planners, architects and engineers.

There's minimum air infiltration with the use of Ceco-Sterling Double-Hung Monumental and Commercial Windows, Series 200-B. That's because the sash float on stainless steel weather stripping, assuring tight, freely operating, vertical sliding windows. They operate silently, so necessary in hospital windows.



Note the heavy extruded box sections for rugged performance, and the double-contact stainless steel weather stripping for tightness. Similar weather strip at jambs provides a spring cushion contact, holds sash clear of frame for easy sliding.



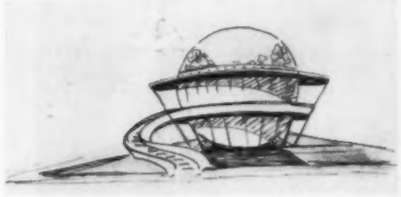
The sweep and pattern of the window treatment lend stately drama to Grossmont. Visors over the windows and right-angle fins control glare while admitting abundant light.

(Continued from page 210)

. . . AND BEYOND TOMORROW

Architect Robert Fitch Smith of Miami dreamed far into the future with his predictions of the part plastics will play in shaping tomorrow's houses. Displaying full-color sketches of the houses pictured below, Mr. Smith expounded:

"Designers have always tried to follow nature's forms. Architects have found it difficult because of materials and construction methods, so we have made use of rectangles, squares and conventional patterns. The caveman found his scale of living in the simplest way, adapting himself to surrounding material. The tent and tepee are scaled to man's use. So is the South Seas thatched shelter. Today, with the use of this new modern material, the architect's dreams come true. For example, let us design a house; let us take a typical building lot, a lot 75 by 120 ft . . . On our drawing pad we will with one color trace the probable footsteps of the mother throughout the house during her average day. With another color we will trace the father's footsteps, then the children's. This gives us a composite pattern of the activities of all and forms a floor plan shape on the lot showing the outline around which we will wrap the clothing walls of the house. This plan shape will be related to the lot, its characteristics, the trees, the neighbors and all. A new free form is born, with no waste corners, enclosed in a new, beautiful, translucent, colorful clothing. The roof design will follow the shape of the plan with its new shape in plastics. The roof may be rounded, spiraled, a bonnet, or may take many other adaptable plastic forms."

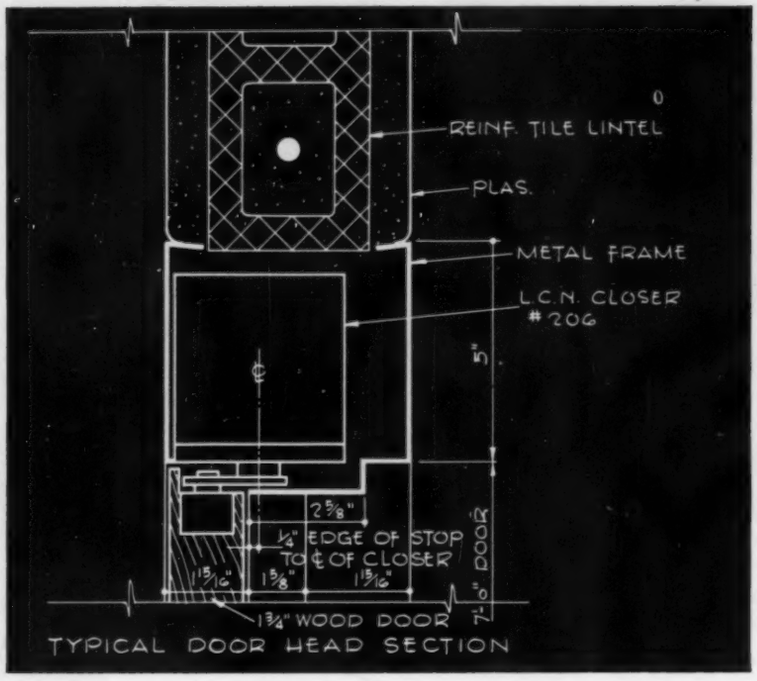


Plastic sphere would contain living areas in center section, all-year gardens above and utilities below. Approached by a winding drive which would take the driver directly to the living area, the sphere would be anchored with struts which could be unfastened quickly in event of earthquake or other disaster so that the sphere could be partially filled with glass and floated above the area of disaster (while remaining anchored, of course, to the earth). Another less extreme design by Mr. Smith utilizes free-floating plastic shapes resting on structural plastic walls

Building Products Exhibition

Plans for a $200,000 traveling building products exhibition have been announced by Producers' Council. To be known as "the Home Building Caravan," it will be viewed by residential architects, builders and sub-contractors. According to William Gillett, Council president, "The Caravan will travel over 25,000 miles and will be shown in 38 major cities . . . The premiere is scheduled for Washington, D. C., on August 30." Other scheduled dates are

(More Roundup on page 226)



CONSTRUCTION DETAILS

for LCN Overhead Concealed Door Closer Shown on Opposite Page

The LCN Series 200 Closer's Main Points:

1. Efficient, full rack-and-pinion, two-speed control of the door
2. Mechanism entirely concealed; arm disappears into door stop on closing
3. Hydraulic back-check prevents door's being thrown open violently to damage walls, furniture, door, hinges, etc. Door may open 180°, jamb permitting
4. Hold-open (optional) set at any one of following points: 85°, 90°, 100° or 110°
5. Easy to regulate without removing any part
6. Used with either wood or metal doors and frames.

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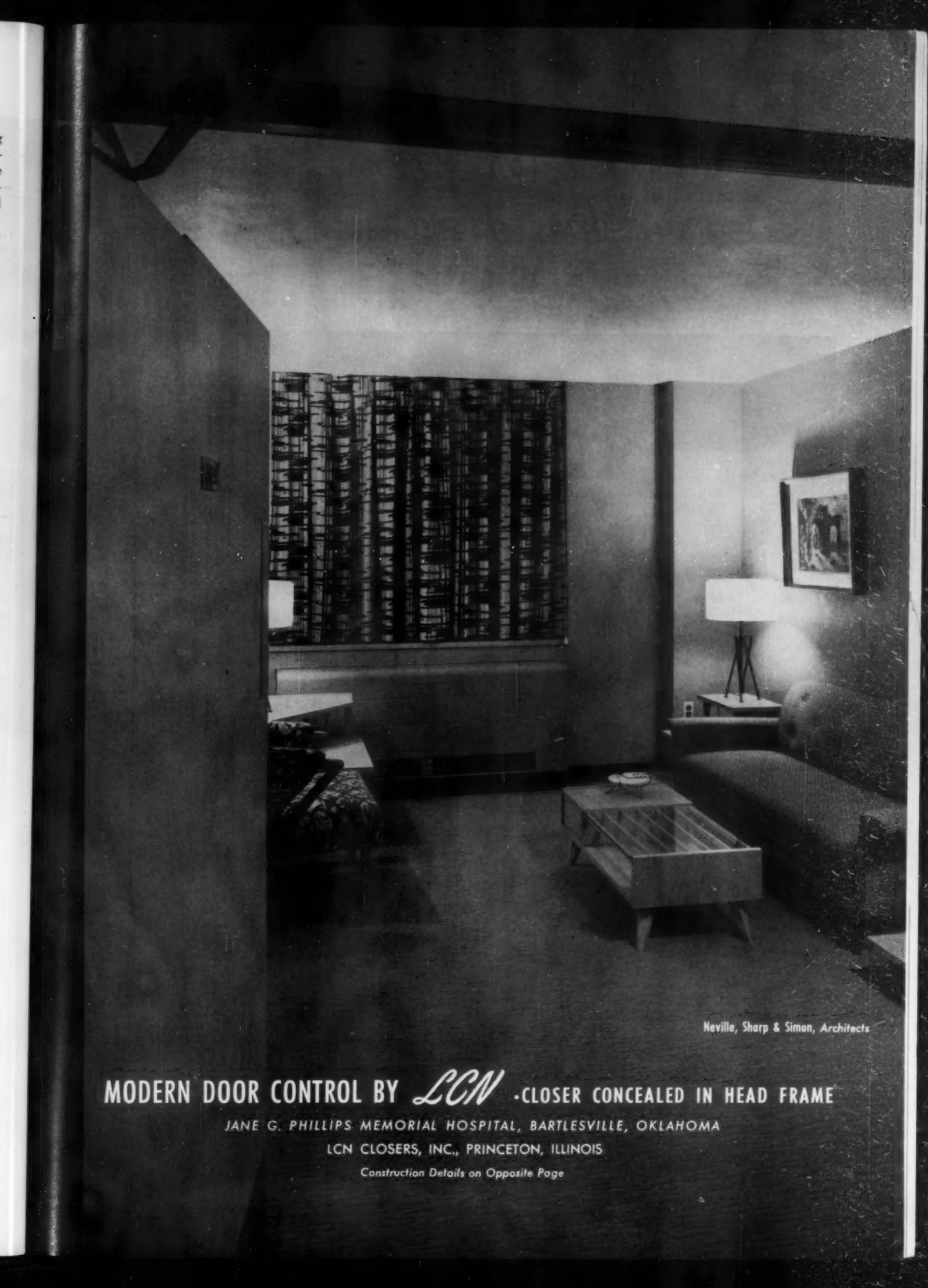

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MODERN DOOR CONTROL BY *LCN* · CLOSER CONCEALED IN HEAD FRAME

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Construction Details on Opposite Page

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Three easy ways to cut building costs

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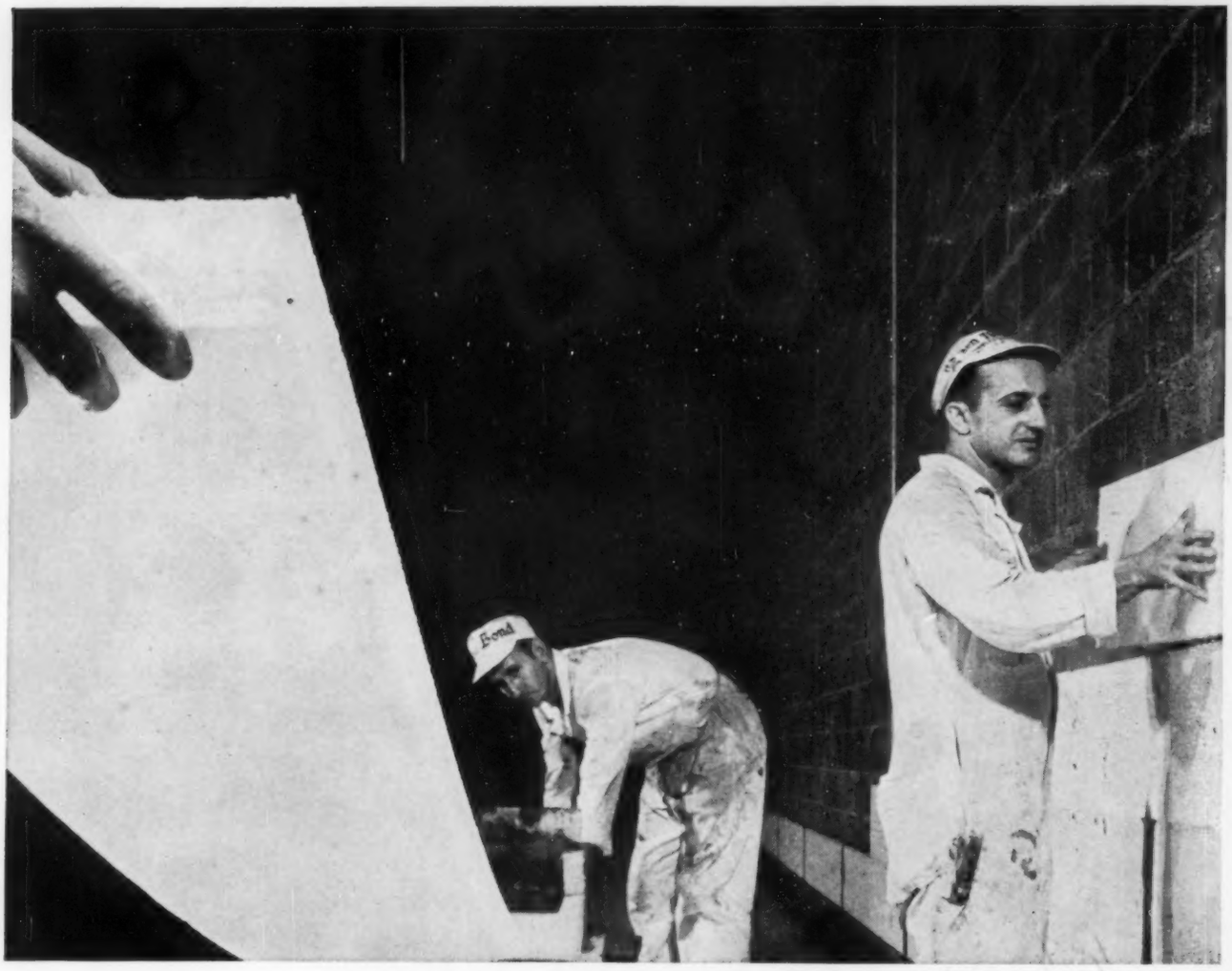

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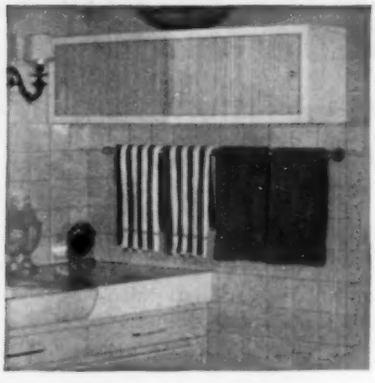

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as follows: Pittsburgh, Sept. 6; Toledo, Sept. 11; Cleveland, Sept. 26; Buffalo, Oct. 2; Boston, Oct. 5; New York (Garden City), Oct. 9; Newark, Oct. 12; Philadelphia, Oct. 16; Baltimore, Oct. 22; Columbus, Oct. 25; Detroit, Oct. 30; Cincinnati, Nov. 2; Indianapolis, Nov. 6; Louisville, Nov. 9; Charleston, Nov. 13; Charlotte, Nov. 16; Miami, Nov. 20; New Orleans, Nov. 26; Jacksonville, Nov. 29; Atlanta, Dec. 5; Birmingham, Dec. 10.

KANSAS UNIVERSITY STUDENTS MAKE HYPERBOLIC PARABOLOID

Students in the Department of Architecture and Architectural Engineering at Kansas University have constructed a double-unit hyperbolic paraboloid which served as their display in the University's Engineering Exposition last spring and which will be used for testing roof coverings for a period of one year.

The structure covers an area of 20 by 40 ft, with each of the two units 20 ft square. Each unit is framed with 6- by 6-in. edge beams of ¾-in. laminated plywood supported in concrete foundation piers. The center diagonal beam serves both units. The roof membrane is formed of two layers of 12-in.-wide ¼-in. plywood strips laid perpendicularly. These strips are straight and required only a slight twist to conform to the slope of the beams. The structure is believed to be the first of its kind with straight generators. Members were glued and nailed.

During a year of research planned for the structure a number of roof coverings will be applied to the plywood membrane for testing. Structural action of the paraboloid will also be investigated under conditions of concentrated and unsymmetrical loading.

The project is under the direction of Prof. Willard Strode of the Department of Architecture and Architectural Engineering and Prof. Donald Dean of the Department of Civil Engineering. Plywood for the project was donated by the Douglas Fir Plywood Association.

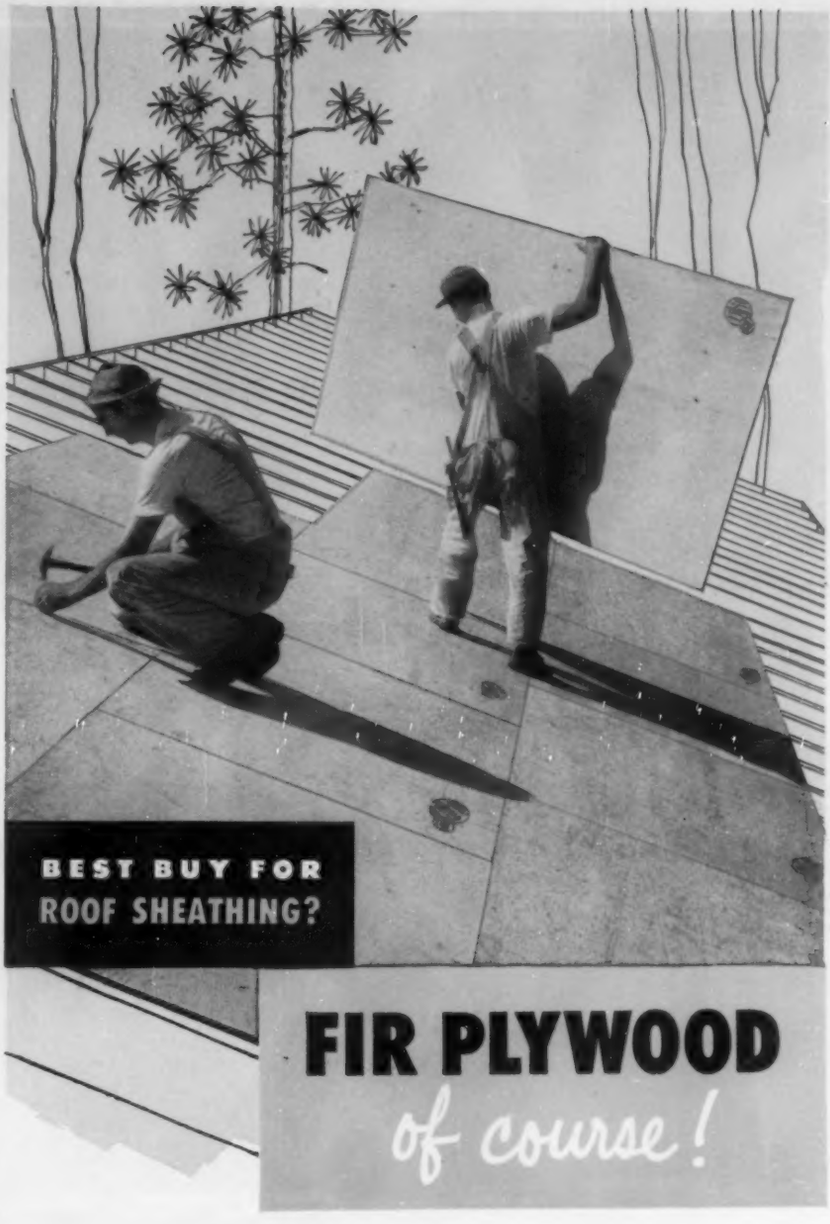
International Congress on Acoustics

"Noise control has become a complicated and dignified engineering science during the post World War II years," said Leo L. Beranek, President of Bolt, Beranek and Newman, Inc., Consultants in Acoustics, in an address to the Second International Congress on Acoustics held at M.I.T. and Harvard in June. "We can look for the work of the noise control engineer to touch on the lives of each and every one of us at home and at work." In introducing the subject of noise control, Mr. Beranek explained, "All acoustical problems have three basic elements in common. These are the source, the over-all transmission path and the criterion or requirement at the receiving end. The source must be fully specified; the characteristics of the existing path must be understood and a criterion for design must be established."

Boston Symphony Hall received some kudos at the Congress from Dean Vern O. Knudsen of the University of California at Los Angeles. Said Dean Knudsen, discussing reverberation in a music hall, "The optimum reverberation for a concert hall, based as it is on subjective judgments, is a controversial subject even among professional musicians and acousticians. One thing is well established today . . . namely, that our musical tastes and heritages are influenced by our physical environment, and that the extensive use of sound absorptive materials in the rooms in which we live, learn and relax condition us to want less reverberation, even in concert halls, than we wanted 50 years ago. But the Boston Symphony Hall, leaving reverberation aside, has so many other acoustical properties that it is always a joy to be here. The hall has, for example, freedom from noise, echoes and undesirable reflections; it has good timing, blending and distribution of reflected sound — and many other praiseworthy qualities, for which we gladly give thanks to Sabine, the architects McKim, Mead and White and the music lovers of Boston."

The Architect and the Law

The A.I.A. Standard Contract Forms and the Law, by William Stanley Parker, FAIA, and Faneuil Adams, LLB, is divided into two parts, entitled "Agreements between Owner and Architect" and "Agreements between Owner and Contractor." $7.50. Published by Little, Brown & Co., 34 Beacon St., Boston 6.



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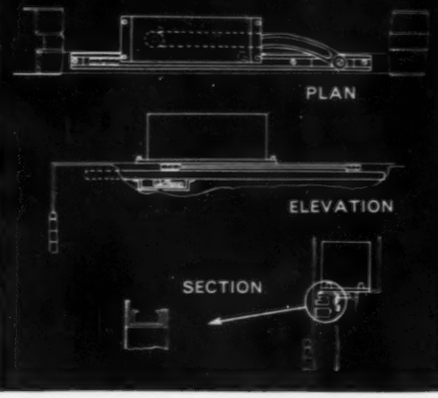

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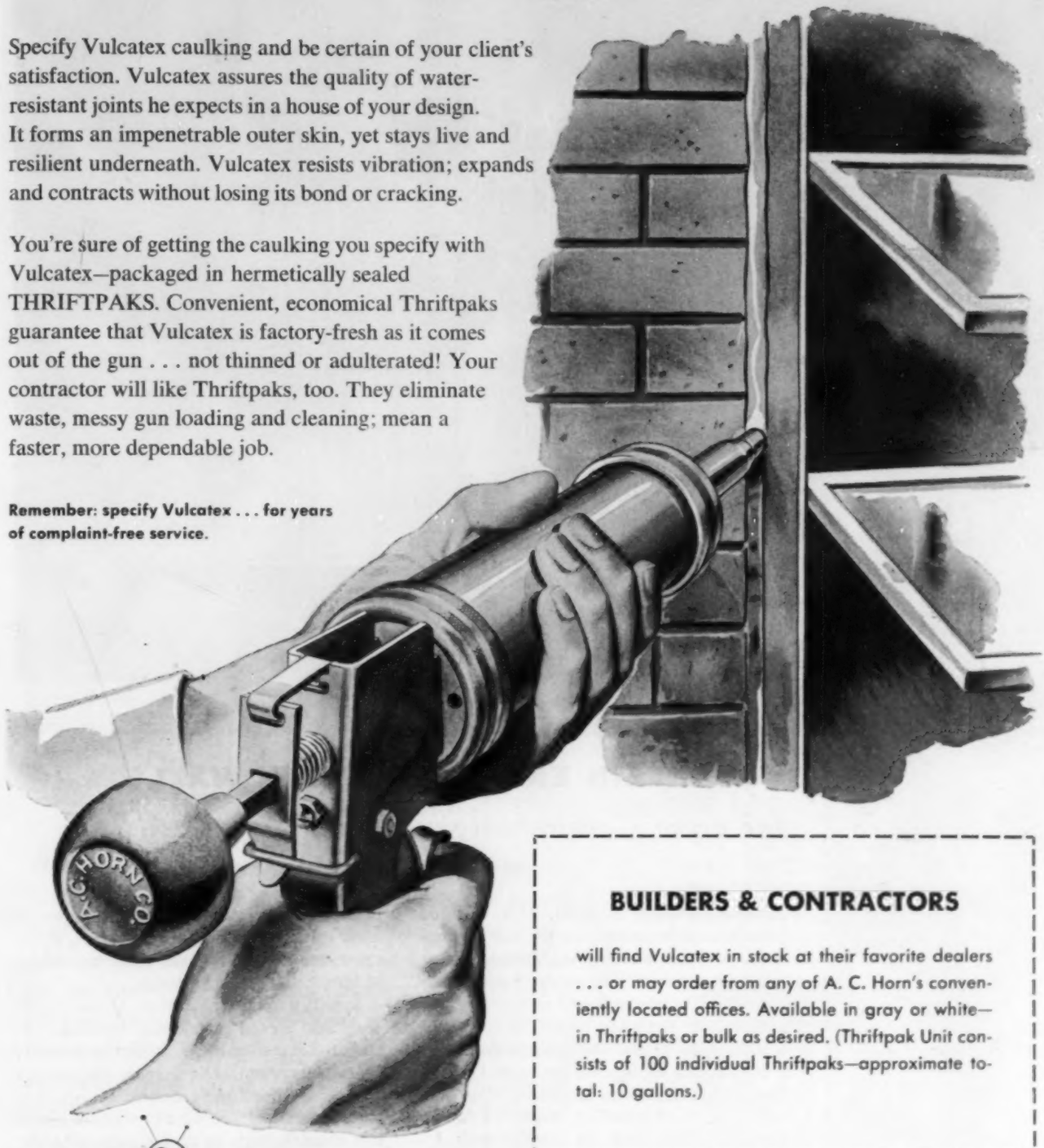

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ARCHITECT:
George L. Dahl, AIA
Dallas, Texas

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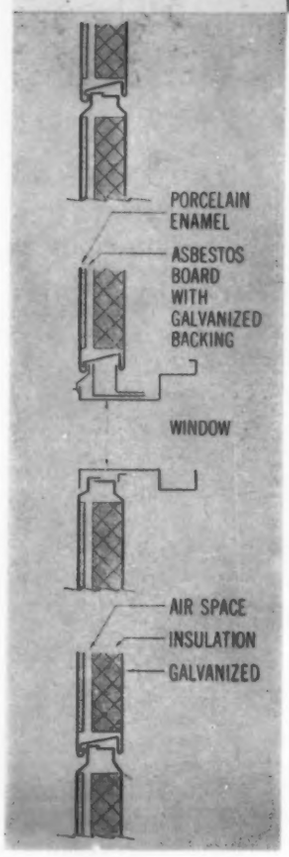

Another Architect selects
PORCELAIN ENAMEL CURTAIN WALLS
for color . . . durability . . . economy

Architect George L. Dahl, AIA, selected porcelain enamel panels for the new Citizens National Bank building in Abilene, Texas, for these reasons: "They meet requirements for durability, strength and economy—give the designer flexibility in adding form and lifetime color to thin-wall construction."

Its colorful appearance has made Citizens National a new Abilene landmark. More than 30,000 sq. ft. of porcelain enamel on Armco Enameling Iron form the exterior walls.

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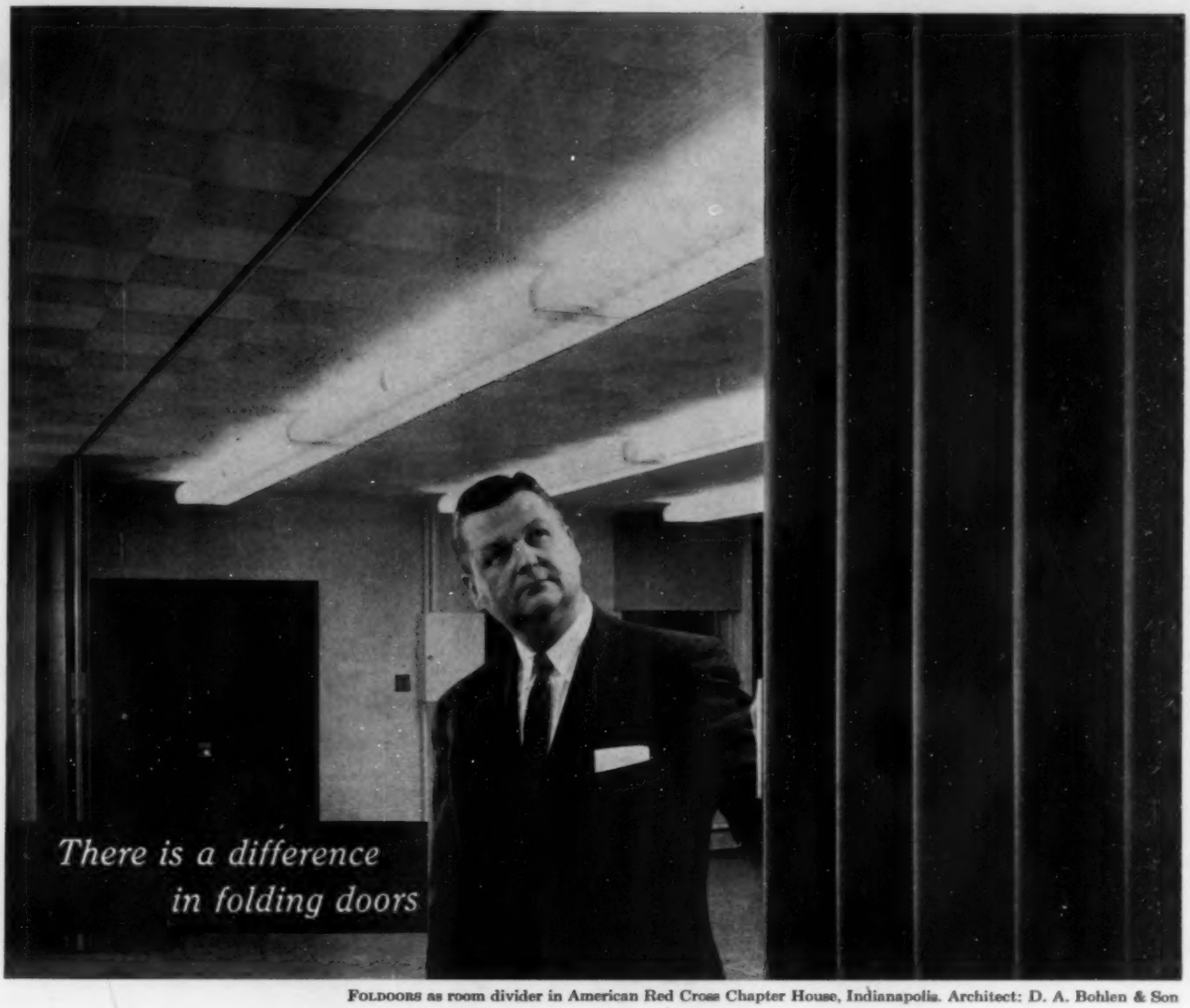

FOLDOORS as room divider in American Red Cross Chapter House, Indianapolis. Architect: D. A. Bohlen & Son

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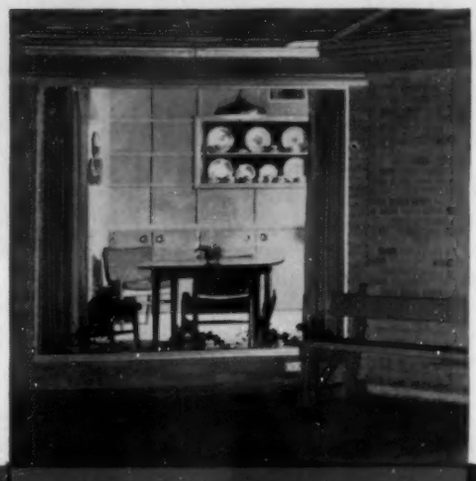

All bedrooms have full-length windows that look out on private backyard patio. A 3-ton Year-round Weathermaker air conditioner is shown on the left.

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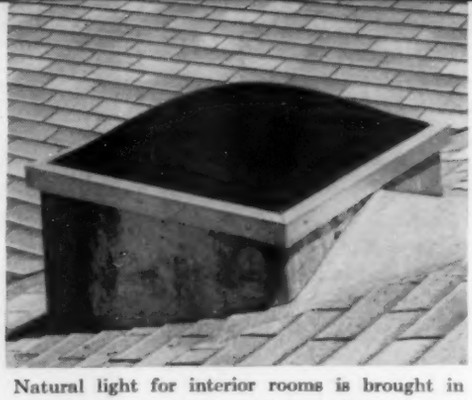
The Rose living room. Entire house is built around this room which opens into every other room and to the patio. Where the view is less desirable, storage walls are used.



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PRODUCT REPORTS

(Continued from page 211)

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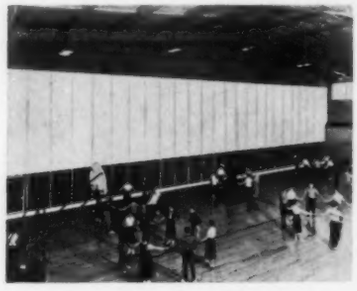

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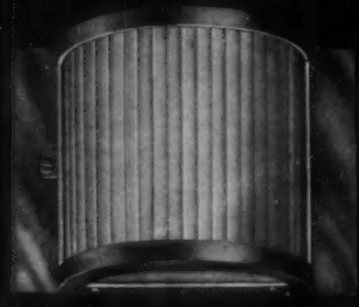
(More Products on page 240)

design by mc Philben



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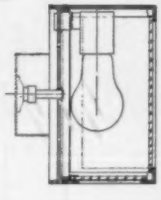

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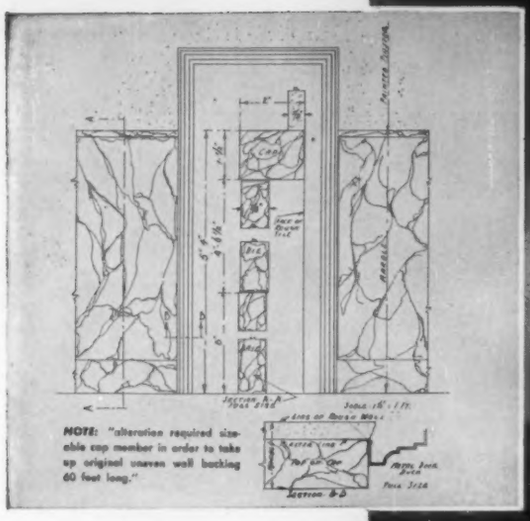

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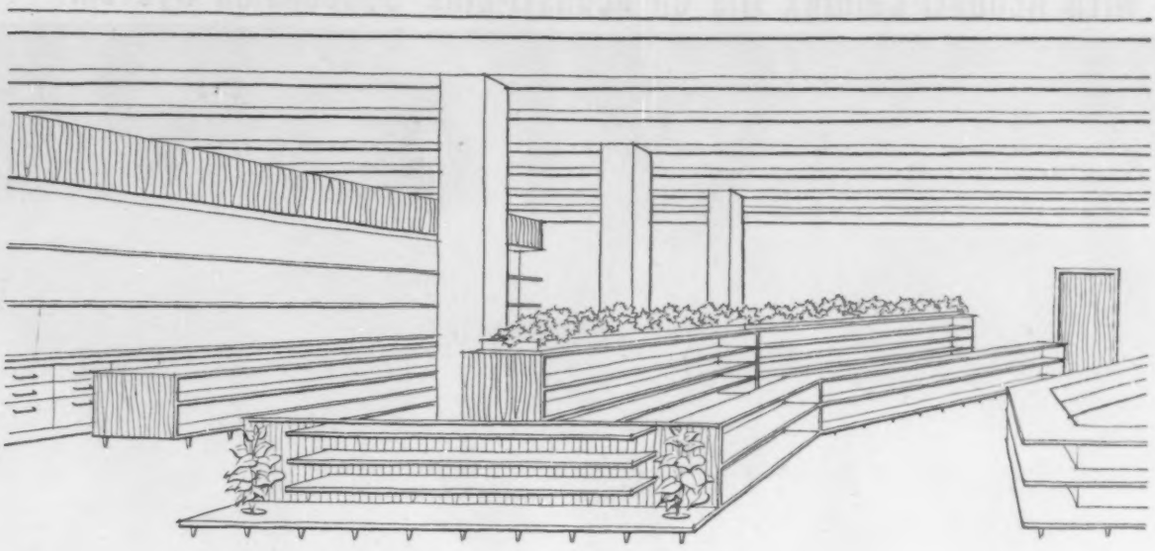

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New Prudential Buildings Feature QUIET

with Acousti-Celotex Tile on Acousti-Line* Suspension System

*REG U. S. PAT. OFF.

Office in Jacksonville Prudential Building, showing typical Acousti-Celotex Sound Conditioning installation.

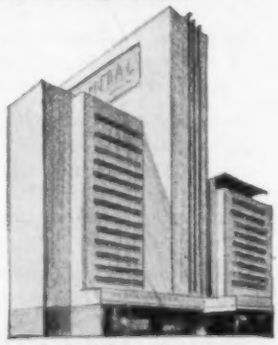
Prudential's South Central Home Office, Jacksonville, Florida
Architects: Kemp, Bunch & Jackson.

Prudential's North Central Home Office, Minneapolis, Minnesota
Architects: Magney, Tusler & Setter.

Acousti-Celotex Sound Conditioning installations in the Prudential Buildings are models of engineered effectiveness. More than 1,000,000 square feet of incombustible Acousti-Celotex Perforated Mineral Tile, Celotone Tile, and Acousteel metal pan were applied.

The Acousti-Line Suspension System, on which Acousti-Celotex Tile was installed, offers two additional functional benefits: Complete flexibility of ceiling units . . . tile, lights, air diffusers, etc. . . . permits interchanging for unlimited variety of office layouts and arrangements. And easy access is provided to above-ceiling areas for servicing of lights, wires, ducts, plumbing, other utilities.

This combination of beauty, functionalism, and acoustical efficiency represents modern sound conditioning and ceiling design at their best . . . well in keeping with the most advanced architectural achievements.



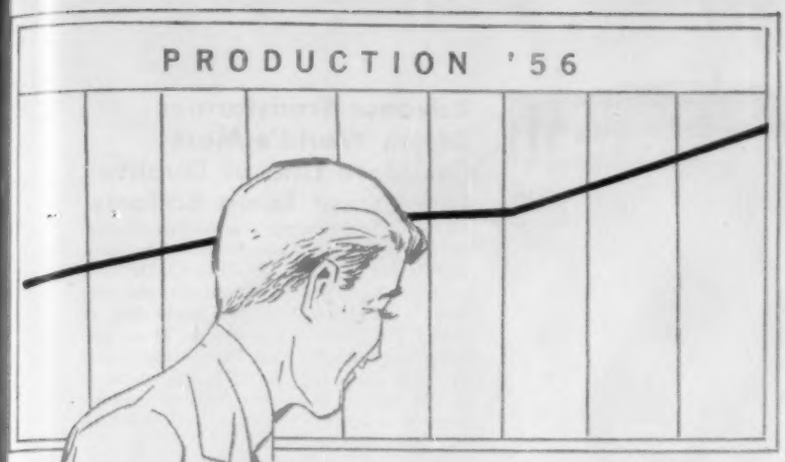
Prudential's Southwestern Home Office, Houston, Texas
Architect: Kenneth Franzheim.

ACOUSTI-CELOTEX
REGISTERED U. S. PAT. OFF.
Sound Conditioning

TRADE MARK

Products for Every Sound Conditioning Problem—The Celotex Corporation, 120 S. LaSalle St., Chicago 3, Illinois • **In Canada:** Dominion Sound Equipments, Ltd., Montreal, Quebec.

FOR FULL DETAILS on the complete line of Acousti-Celotex products, please write to the Celotex Corporation, Dept. B-86, 120 S. LaSalle Street, Chicago 3, Illinois, or consult Sweet's Catalog Service.



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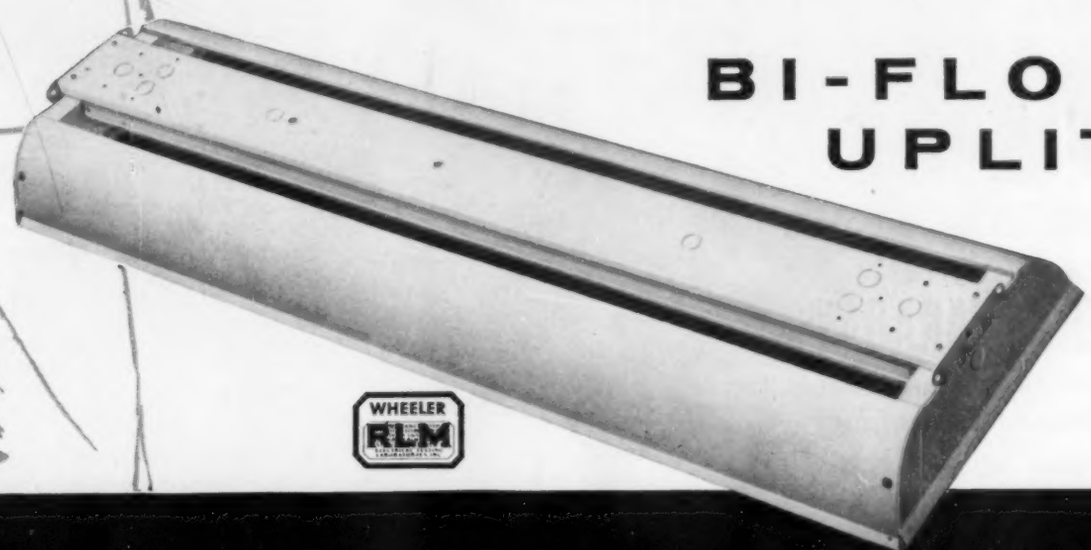
outstanding new industrial lighting fixture — 28% uplight! Desirable low cost!

Unique Wheeler construction! Approximately 28% of the total fixture illumination is UPWARD and 72% is downward, thus providing greater seeing comfort, better brightness ratios and higher quality illumination.

30° cross-wise shielding of both lamps reduces direct glare to a minimum. Write for Bulletin No. 97.

BI-FLO UPLITER



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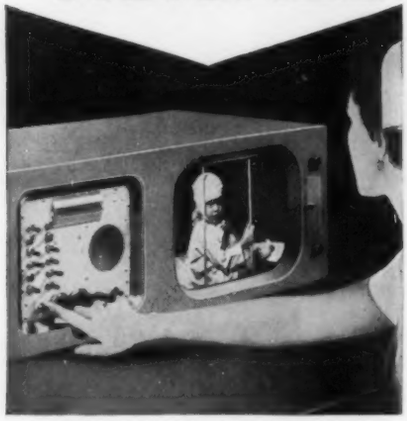

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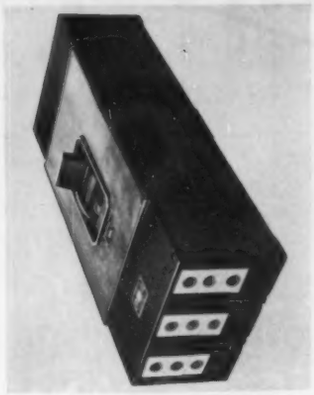
PRODUCT REPORTS



800-Amp Circuit Breaker

An 800-amp M-frame circuit breaker, the first molded case circuit breaker to be approved by Underwriters' Laboratories for operation at this continuous current rating, can be used, it is said, in panelboards, power panels, switchboards, motor controls, bus duct plugs and individual enclosures. No larger than the L-frame breaker rated at 600 amp, the new breaker offers optional pressure connectors for either double or triple cable connections per phase within the case. Triple 300- to 400-mcm or special double 600- to 750-mcm connectors are available, as shown above. *I-T-E Circuit Breaker Co., 19th and Hamilton Sts., Philadelphia 30, Pa.*

Circulating-Type Fireplaces

New design features in circulating-type fireplace units include a reshaping and lowering of the full smoke dome, thus permitting its use in conventional and lower type mantel designs. A series of baffles welded to the firebox has been rearranged to insure greater efficiency of air flow over the entire firebox. New sizes include 32-, 36- and 54-in.-wide openings, providing a full range of sizes from 28 to 54 in. *The Majestic Co., Inc., Huntington, Ind.*

(More Products on page 244)

Advance Transformer Offers World's Most Complete Line of Quality Fluorescent Lamp Ballasts

Through outstanding engineering developments and modern manufacturing facilities, ADVANCE TRANSFORMER COMPANY has become the world's largest manufacturer devoted exclusively to the production of quality fluorescent lamp ballasts. These precision built, power regulating instruments supply exacting amounts of electrical energy for the efficient operation of all fluorescent lamps and are aptly called "THE HEART OF THE LIGHTING INDUSTRY."

Continuing research and constant new developments in both engineering and manufacturing divisions have made possible the introduction of many new ballasts with exclusive patented features. Thus, ADVANCE provides lighting equipment manufacturers, designers, architects, engineers, contractors and other fluorescent lamp ballast users the world's most extensive line of fluorescent lamp ballasts. When you use ADVANCE, there is a ballast for every specific purpose, never a need to compromise.

ADVANCE ballasts are listed by Underwriters' Laboratories, Inc., meet the Canadian Standards Association requirements and many meet or exceed Certified Ballast Manufacturers' specifications. Specify ADVANCE to be sure to get the ballasts with the "plus factors" that have built the world's largest company devoted exclusively to the manufacture of fluorescent lamp ballasts.

The Advance Transformer Company will replace, at no charge, any ADVANCE fluorescent lamp ballast which becomes inoperative within two years from date of manufacture, provided the conditions of ballast operation have conformed to the company's recommendations and the inoperative ballast is returned to an authorized ADVANCE Service-Stocking Distributor.

For anyone who manufactures, specifies, installs or uses fluorescent lighting, ADVANCE TRANSFORMER COMPANY has prepared helpful literature which they will gladly send without cost or obligation.

Fluorescent Lamp Ballast Buyer's Guide

This eight-page brochure gives data on the world's most complete line of Fluorescent Lamp Ballasts. It includes specifications, wattage, watt loss, circuit voltage, dimensions, weight, etc. This brochure is an invaluable aid for specifiers and users of fluorescent lamp ballasts.

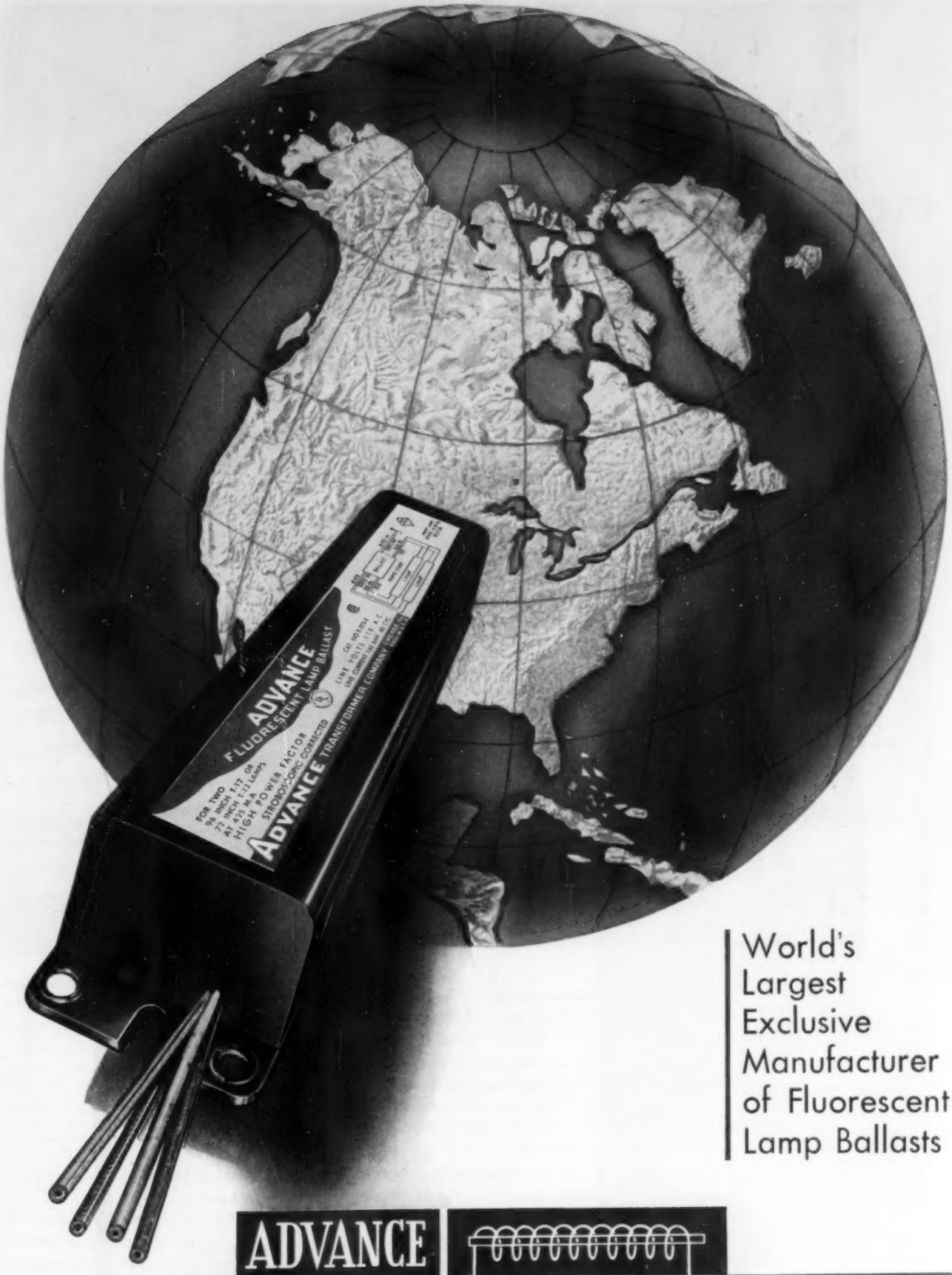
Fluorescent Lamp Ballast Cross Reference Guide

This helpful guide lists many popular ballasts by catalog number and the ADVANCE ballast that should be used whenever ballast replacement becomes necessary. It is an invaluable reference chart that saves time and money for all users of fluorescent lamp ballasts.

Service-Stocking Distributor Plan and List of Distributors

This is a six-page color brochure that lists, by city and state, more than 550 distributors who carry a stock of ADVANCE Fluorescent Lamp Ballasts, to provide immediate replacement service for *ballasts of any make* that become inoperative.

You may receive a copy of one or all of these brochures by contacting ADVANCE TRANSFORMER COMPANY, Marketing Division, 2950 North Western Avenue, Chicago 18, Illinois.



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Lamp Ballasts

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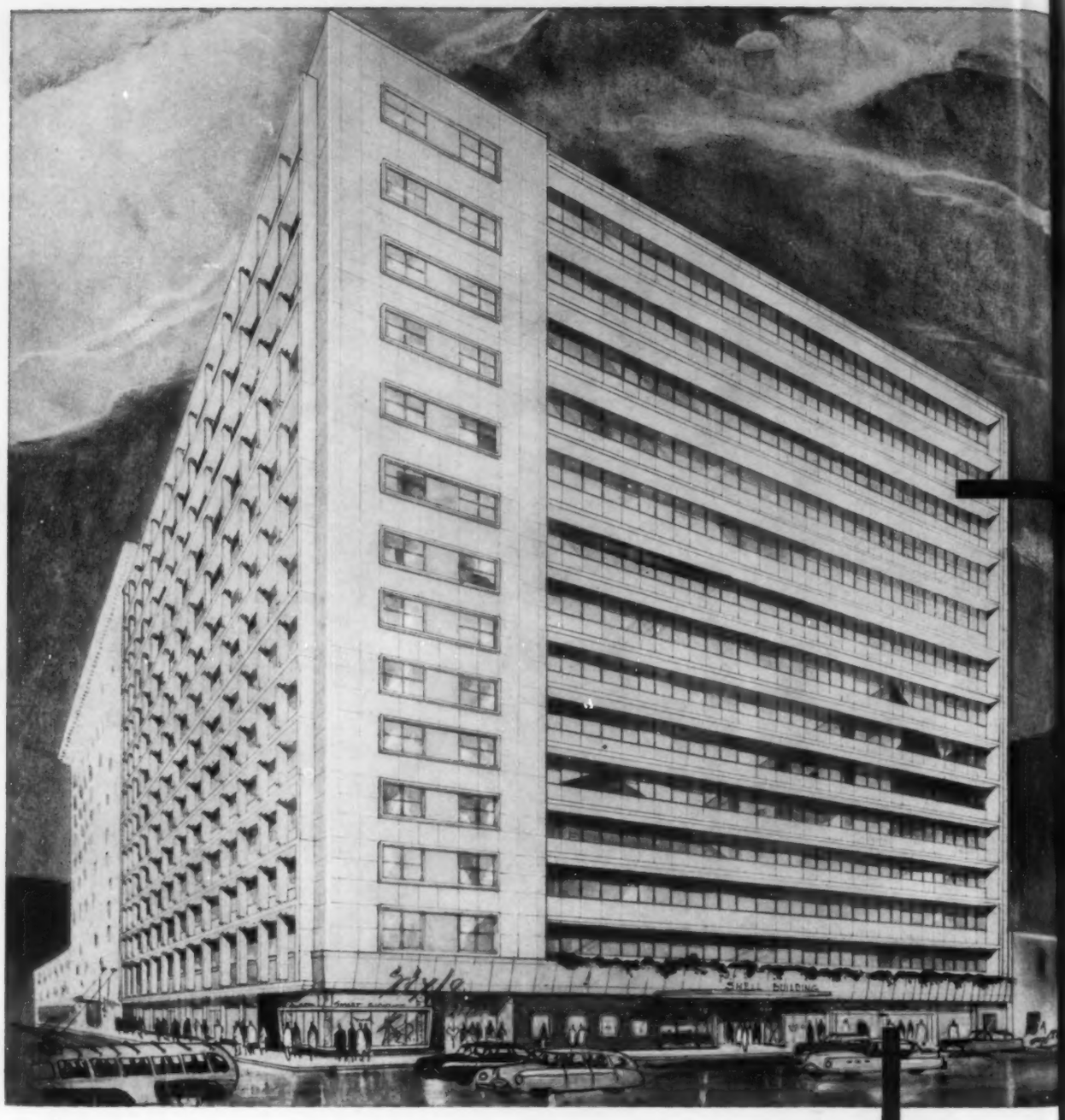


With their eyes on the future, architects August Perez & Associates planned the Shell Building . . . a brilliant new addition to New Orleans' skyline . . . a building completely *ahead* by design.

Every one of its spacious, air conditioned offices is *custom-tailored* to the individual taste and needs of each tenant. And, setting a new trend in *convenience*, eight floors of one wing are hotel rooms . . . with a huge auditorium for business and social functions. Attractive shops, a bank and restaurant are conveniently located on the ground floor.

Built of limestone and glass with a granite base, the Shell Building represents a big step ahead in structural design . . . because its multi-story frame is the first ever constructed of all-lightweight concrete.

And . . . through the architects' foresight . . . *Westinghouse Water Coolers* daily refresh all those fortunate enough to work in or visit this great new building.

AHEAD...by design

Shell Building, New Orleans
Designed by August Perez & Associates
Built by Gurvais Favrot Company

WESTINGHOUSE WATER COOLERS

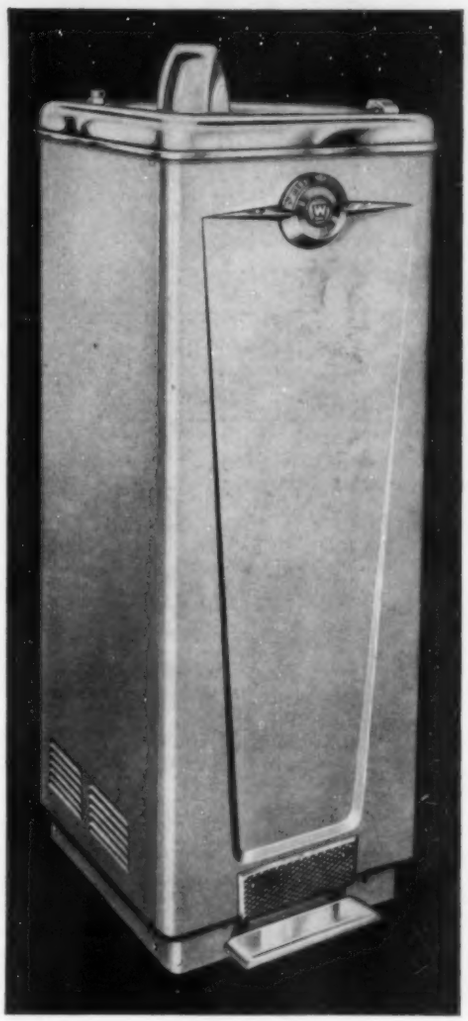
Were specified by architects August Perez & Associates because by design they, too, are . . .

Ahead for Convenience! Only Westinghouse offers Dual Electric Control—both finger-tip and toe-tip control—at no extra cost . . . plus Automatic Stream Height Regulator for no-spurt, no-splash drinking. Compact, space-saving design occupies only 14 square inches of floor space.

Ahead for Efficiency! They deliver up to 60% more cold water at less cost . . . thanks to the Patented Pre-Cooler and Super Sub-Cooler that use waste cold water to pre-cool incoming water and sub-cool the hot liquid refrigerant.

Ahead for Reliability! Amazing new Solenoid Water Valve eliminates all possibility of leaks . . . Hermetically-sealed Refrigeration System assures more years of trouble-free performance . . . *and* the E-Z Clean Strainer prevents water stoppage due to pipe scaling. All models backed by Westinghouse 5-Year Guarantee plan.

Plan Ahead . . . put Westinghouse in your plans, just as more and more leading architects are doing. Specify the newest and finest of water coolers for your clients. 18 handsome models to choose from. Call your Westinghouse Water Cooler Distributor today. He's listed in the Yellow Pages of your telephone directory. Ask him about the new PAY-WAY PLAN . . . and learn how Westinghouse Water Coolers actually pay for themselves.



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LIVE BETTER ELECTRICALLY

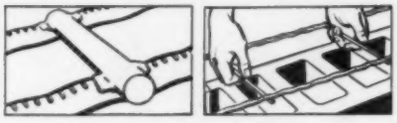
WATCH WESTINGHOUSE *WHERE* ***BIG*** *THINGS ARE HAPPENING FOR* ***YOU!***

For BETTER STRONGER WALLS

USE WAL-LOK IT BONDS BETTER

Mortar Joint Reinforcing

THE WAL-LOK WAY



When a mason uses reinforcing in a masonry wall, he lays the reinforcing right on the last course. With WAL-LOK, Cross Rods are welded across the Side Bars. The mason puts WAL-LOK on the wall with the Cross Rods DOWN.

The Cross Rods hold the Side Bars up away from the blocks and the mortar completely surrounds each Side Bar. With WAL-LOK, the mortar grips all the way around!

All WAL-LOK is also deformed and knurled for a positive bond the full length. All this still permits a quarter inch mortar joint.

THE WRONG WAY

With ordinary reinforcing, where all the wires are butt-welded in one plane, the Side Bars rest right on the blocks. The mason puts on his mortar. Steel doesn't float, so the mortar can't get under the Side Bars and the mortar bonds only to the top and sides.

WHY EXPECT MORTAR TO DO SOMETHING YOU CAN'T DO?

When you try to hang onto a rod, you don't hold it with your finger tips. You grip it in your fist with your fingers wrapped all the way around.

Why gamble—on cracked walls or wall failures. WAL-LOK costs so little yet adds so much to the strength and value of the structure.

WRITE TODAY for your copy of WAL-LOK's new folder showing sizes, specifications and test results.

WAL-LOK

ADRIAN PEERLESS, INC.
1406 E. Michigan St.
Adrian, Michigan

PRODUCT REPORTS

Vinyl Wall Covering

A completely restyled color line has been developed for *Kalistron*, with 20 of the 35 available colors entirely new. *Kalistron* is made by fusing colored lacquer to the underside of clear vinyl sheet, which protects the color from stains, scratches and other abrasive wear. A suede-like backing facilitates installation. *U. S. Plywood Corp., 55 West 44th St., New York 36, N. Y.*

Wood Finish Air Conditioner

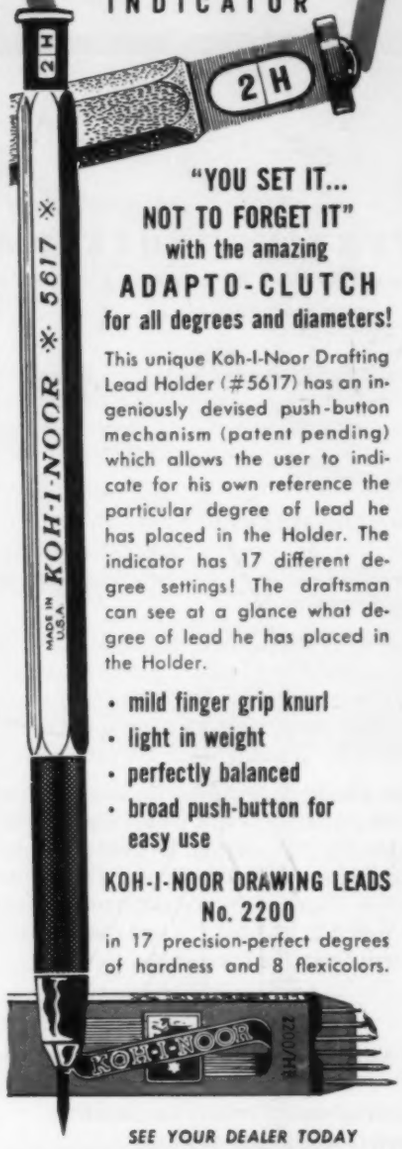
A new 5-ton air conditioner for direct window or outside wall installation has an air distribution head in natural wood-grain finish. *General Air Conditioning Corp., 4542 East Dunham St., Los Angeles 23, Calif.*

Plastic Window Panes

A window made of fiber-glass-reinforced plastic and special ingredients that filter sunlight like a suntan oil has been developed for buildings in which are stored materials that can be harmed by ultraviolet light. Engineers claim that the light green panes permit up to 50 per cent of visible light to pass through but keep out ultraviolet rays. Measuring 14 by 20 in., they are said to be resistant to chemicals, smoke and smog, unbreakable and easy to clean. *Firestone Tire & Rubber Co., Reinforced Plastic Div., Akron, Ohio.*

(More Products on page 250)

it's new!
it's terrific!
the
KOH-I-NOOR
HOLDER
with the
"Eye-Cue"
INDICATOR



"YOU SET IT...
NOT TO FORGET IT"
with the amazing
ADAPTO-CLUTCH
for all degrees and diameters!

This unique Koh-I-Noor Drafting Lead Holder (#5617) has an ingeniously devised push-button mechanism (patent pending) which allows the user to indicate for his own reference the particular degree of lead he has placed in the Holder. The indicator has 17 different degree settings! The draftsman can see at a glance what degree of lead he has placed in the Holder.

- mild finger grip knurl
- light in weight
- perfectly balanced
- broad push-button for easy use

KOH-I-NOOR DRAWING LEADS
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in 17 precision-perfect degrees of hardness and 8 flexicolors.

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PENCIL COMPANY, Inc.
BLOOMSBURY, NEW JERSEY

Jamison Sound Reduction Doors help muffle high level engine noise

above—JOB-ENGINEERED Jamison S-R Doors conform to special shape of openings on installation at Long Beach Division of Douglas Aircraft Co., Inc. Airplane shown is Douglas RB-66.

below—INNER and OUTER set of Jamison S-R Doors shown on high thrust jet engine test cell. Note massive, vibration-proof hardware.

There's no better test of sound reduction doors than when they must close down on the uproar produced by a couple of J-71 engines. And there's no more conclusive proof of the effectiveness of these Jamison S-R Doors than the fact that they have been specified time and again by airlines, engine manufacturers and the military services.

Unwanted noise has been an object of study and research by Jamison engineers for years. They found that the main factor in minimizing sound transmission through a structure is weight per unit area. This led to the development of the Jamison "Mass Principle." And the application of this principle has proven effective ever since Jamison first began building sound reduction doors over 30 years ago.

Bring *your* noise problem to Jamison for dependable help, authoritative information. Write for Bulletin 16-F to Sound Reduction Door Div., Jamison Cold Storage Door Co., Hagerstown, Md., U.S.A.

JAMISON

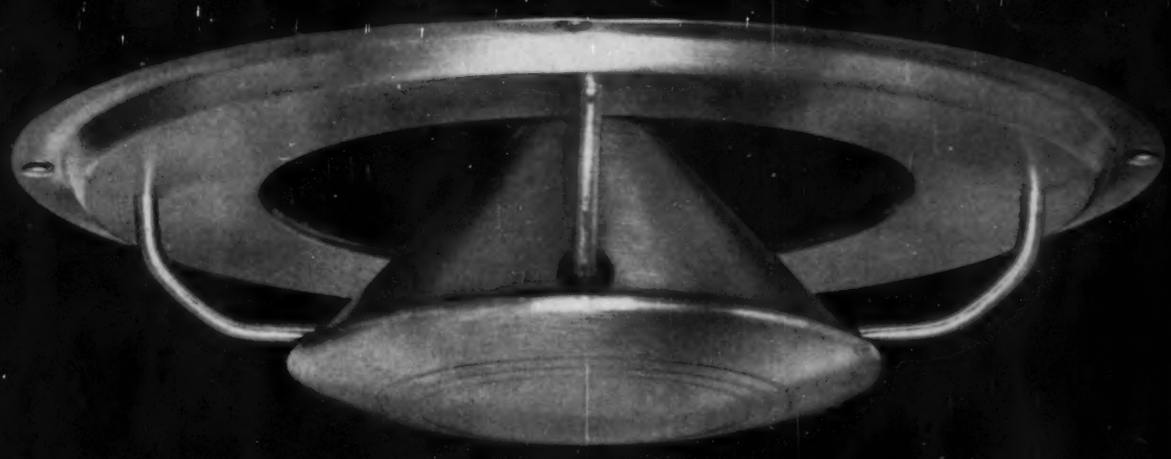
engineered doors

For 50 years the leading builder of cold storage doors

HEARD EVERYWHERE

Lowell®

THE SOUND CHOICE / AL SERIES BAFFLE



Beautiful . . . in appearance and in performance.

Mounts flush for low-ceiling areas. Effective 360° dispersion of clear "ear level" sound. Conical diffuser "floats" on soft rubber grommets. Heavy gauge aluminum. Sizes available for 6" to 15" speakers. Easily installed.

LOWELL: One source for immediate delivery. More than 100 models of ceiling and wall baffles, enclosures, grilles, accessories, intercom equipment.

Write for complete information and specifications.

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see our catalog in Sweet's or write for copy

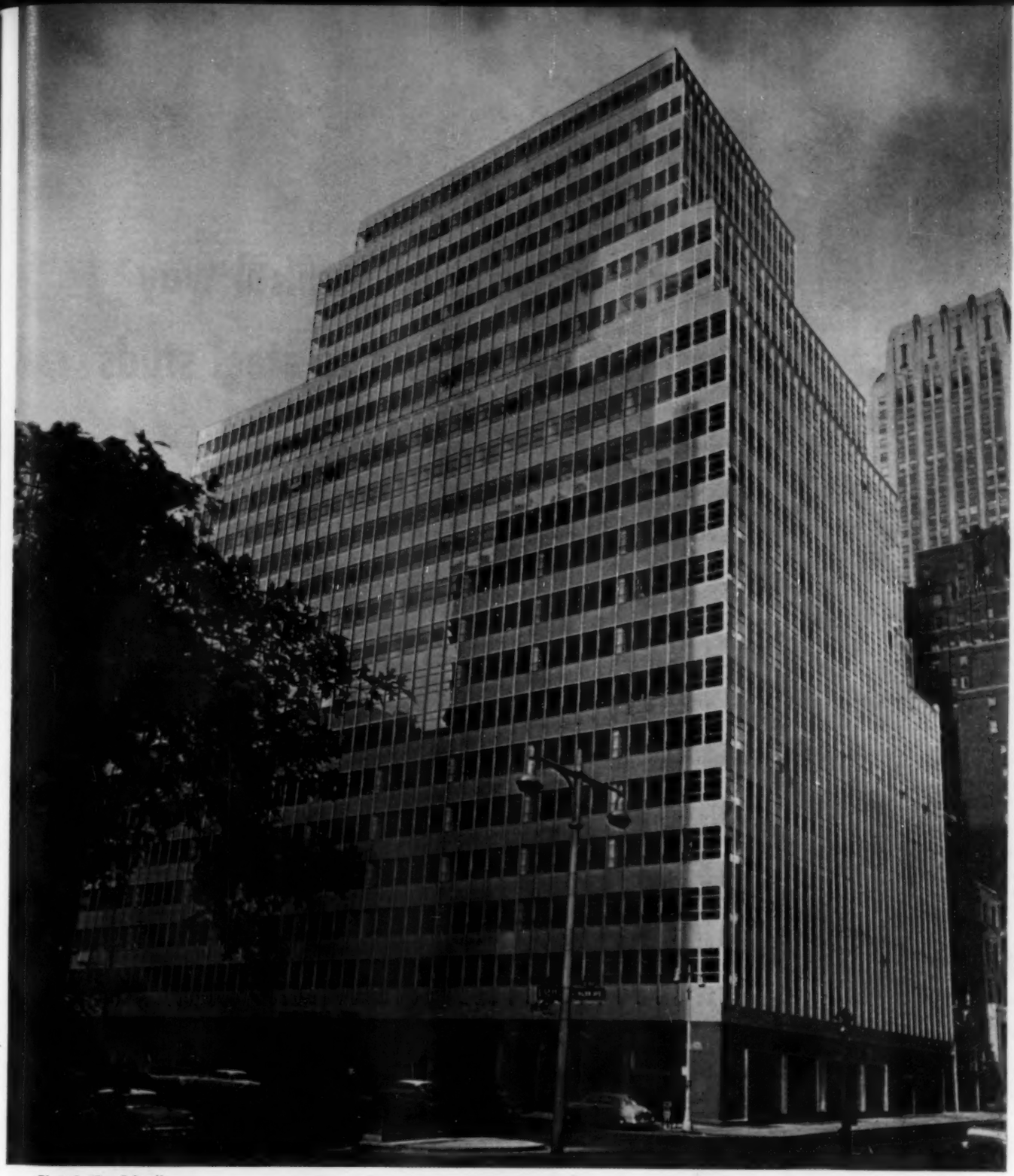


Photo by Ben Schnall.

300 Park Avenue, New York. Architect: Emery Roth & Sons. Contractor: Uris Brothers. Lupton Aluminum Curtain-Wall, Type H. Fabricated and installed by Lupton. Width module is 4'5", center to center of mullions. Mullions are aluminum tube with expansion joints at alternate floors. As the New York code requires a back-up wall to sill height, non-insulated spandrels are used. These are opaque structural glass. Window ventilators open out.

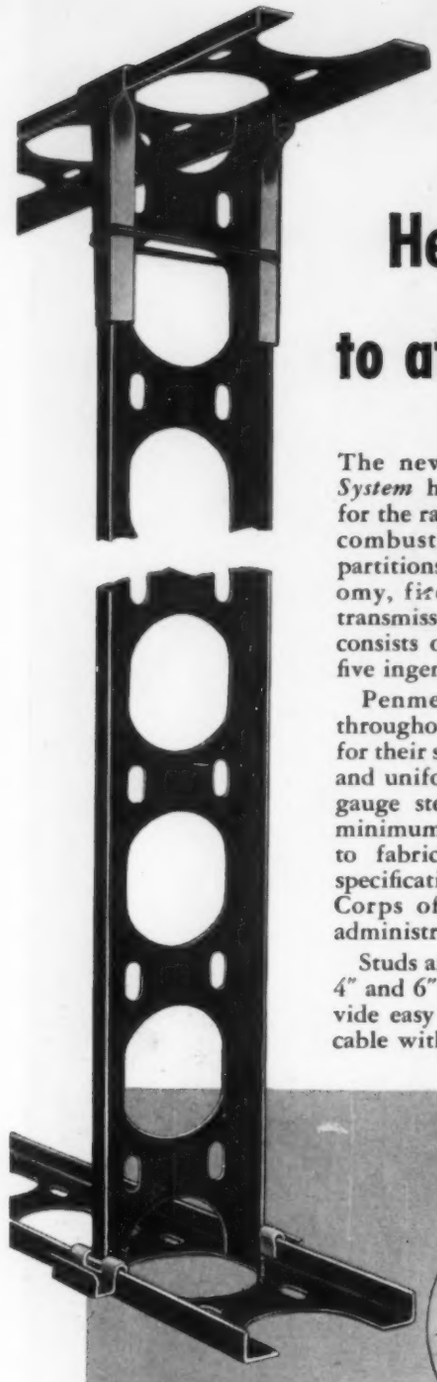
In Tune with the Tempo of New York's Park Avenue — Lupton Curtain-Walls

May we send you an illustrated catalog?

Michael Flynn Manufacturing Company — Main Office and Plant: 700 East Godfrey Avenue, Philadelphia 24, Penna. New York Office: 51 East 42nd Street, New York 17, N. Y. : : West Coast Office: 672 South Lafayette Park Place, Los Angeles 57, Cal. : : Stockton Office and Warehouse: 1441 Fremont Street, Stockton, Cal. : : Cincinnati Office: De Sales Building, 1620 Madison Road, Cincinnati 6, Ohio : : *Sales Offices and Representatives in Other Principal Cities*

LUPTON

METAL WINDOWS AND CURTAIN-WALLS



Here's an easy, economical way to attach gypsum lath to steel studs

The new Penmetal *Studlock Clip System* has been developed expressly for the rapid, low-cost erection of non-combustible non-bearing plastered partitions. Ideal for use wherever economy, fire-resistance and low-sound transmission are required, the system consists of Penmetal studs, track and five ingenious clips.

Penmetal studs are well known throughout the construction industry for their strength, rigidity, straightness and uniformity. They are made of 18-gauge steel to reduce the load to a minimum, and to enable the erector to fabricate easily. They meet the specifications of the United States Corps of Engineers and Veterans' administration.

Studs are furnished in 2", 2½", 3¼", 4" and 6" widths. Their openings provide easy passage of pipe, conduit or cable without expensive chases. Track is made in five sizes to fit over the flanges of the different studs.

Because of the simplicity of the clips, attachment of lath takes minimum time. And, the clips are low in cost.

Send for samples and folder describing the Studlock Clip System. No cost or obligation.

PENN METAL COMPANY, INC.

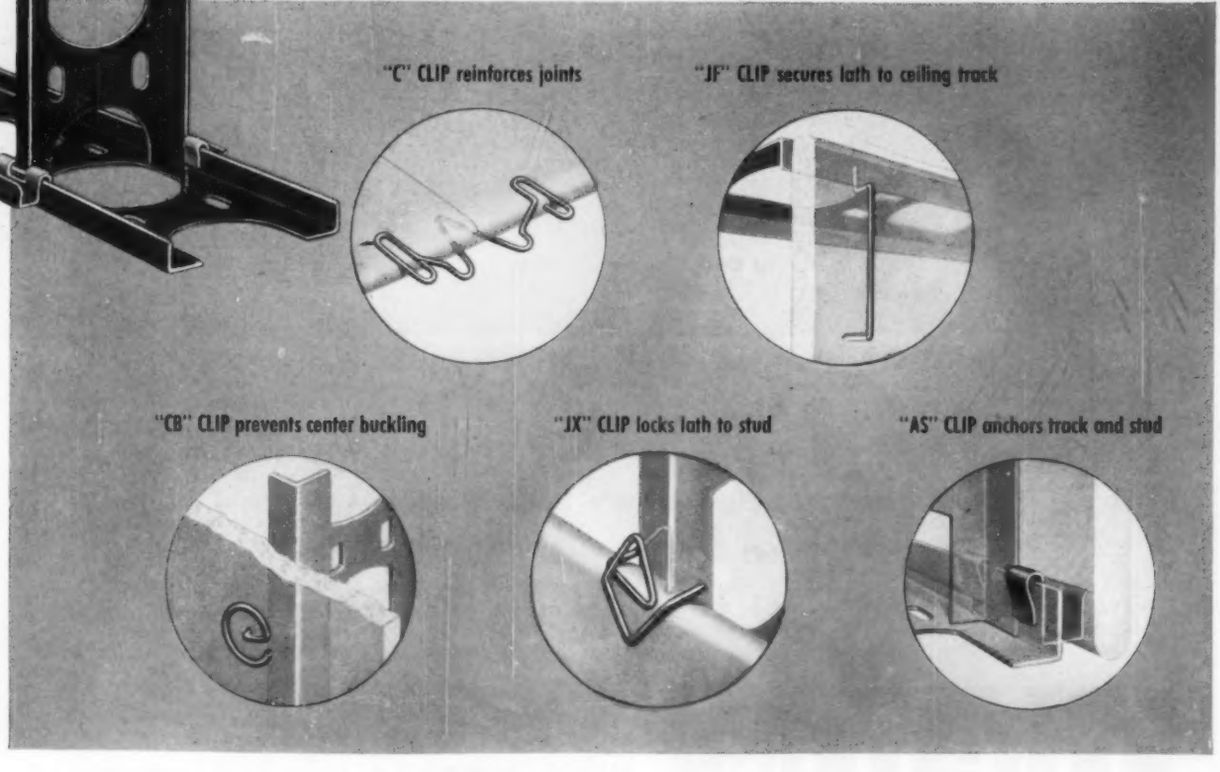
General Sales Office:
40 Central St., Boston 9, Mass.

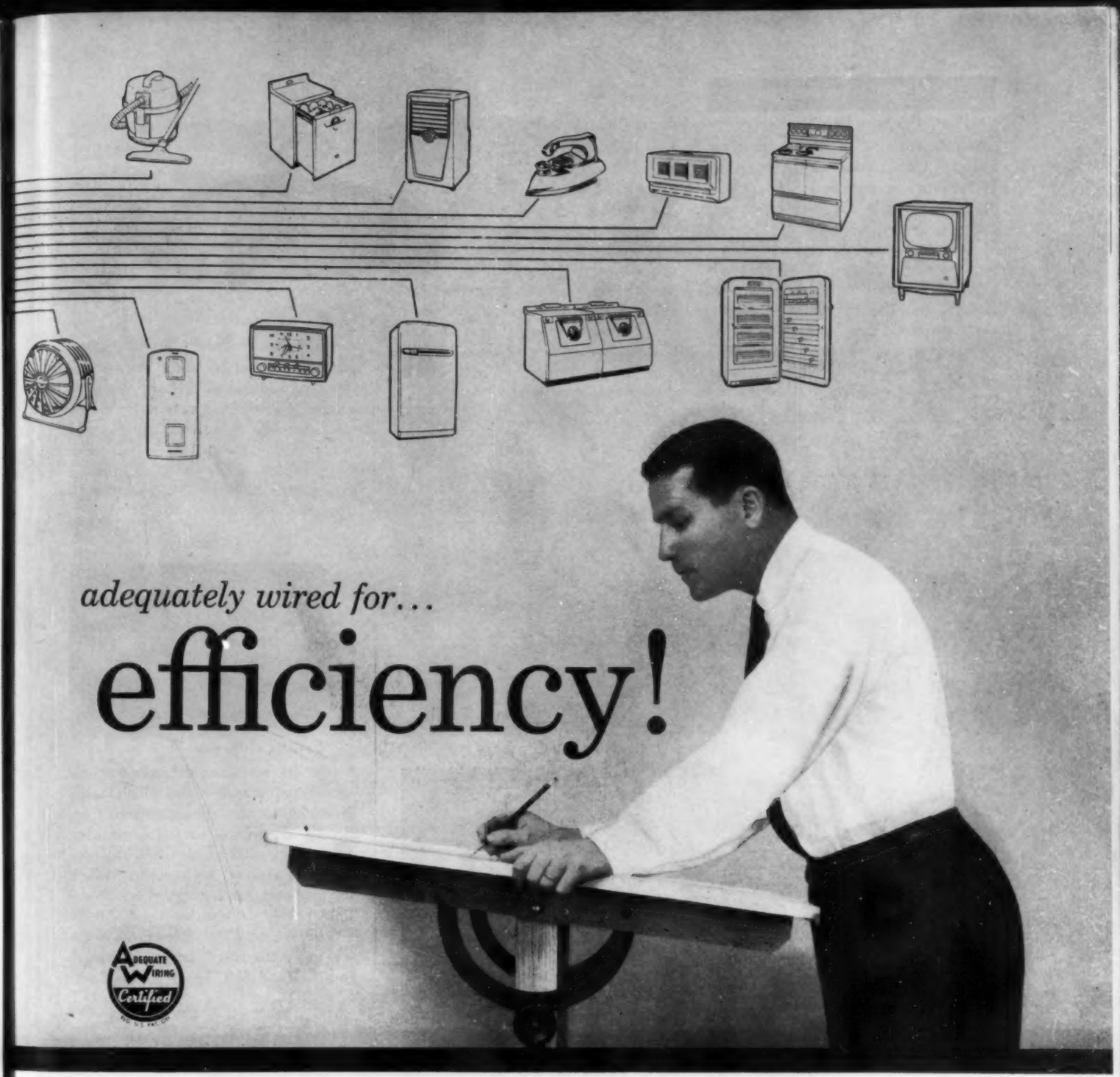
Plant: Parkersburg, W. Va.

District Sales Offices: New York, Philadelphia, Pittsburgh, Chicago, Detroit, St. Louis, Dallas, Little Rock, Seattle, San Francisco, Los Angeles, Parkersburg

METAL MADE Penmetal 1869 OF QUALITY

PM-116


"C" CLIP reinforces joints
"JF" CLIP secures lath to ceiling track
"CB" CLIP prevents center buckling
"JX" CLIP locks lath to stud
"AS" CLIP anchors track and stud



Modern electrical living demands fore-sighted "adequate wiring" plans

Automatic washing machines and dryers. Freezers and air conditioners. Dishwashers and garbage disposal units. Television, new lighting, power tools. Most of these didn't exist a few years ago. Today they are "necessities" that are fast making even new homes electrically obsolete.

Obsolete because in many homes this growing emphasis on electrical living has made the wiring system a sensitive spot. That's why leading manufacturers have geared to produce more wire and cable with safer, more efficient insulation. Many of them are using Monsanto Opalon vinyl resins and electrical compounds.

Architects and builders, alert to the fact that new inventions will create new electrical needs and will make still greater demands on wiring systems, are giving due consideration to the demands of "adequate wiring."

What constitutes "adequate wiring"—now and for the future? The best answer is found in the booklet "Residential Wiring Handbook." If you would like detailed assistance in your electrical planning, write for a complimentary copy to: National Adequate Wiring Bureau, 155 East 44th Street, New York 17, New York.

A NEW REPORT, "Pipelines to the Future," containing an evaluation of different types of plastic pipe is available at $1.00 each. This study was compiled by Monsanto's Structural Plastics Engineering Group. You are invited to write them on any question pertaining to the use of plastics in construction. Monsanto Chemical Co. Room 238, Springfield 2, Mass.

MONSANTO

OPALON: REG. U. S. PAT. OFF.

Wall Exhaust Fan

Conso Windmaster fan models now include a wall exhaust fan designed to operate with an automatic wall shutter for wall ventilation in residential and commercial use. Available in 24-, 30-, 36- and 42-in. models, the fans can be used with the *Conso-Timer Switch* for time control or continuous operation. *Consolites*, fiber-glass reinforced plastic skylights which have been given tentative approval by the State of Georgia for use in state schools, are also manufactured by *Consolidated General Products, Inc., P.O. Box 7425, Houston 8, Tex.*

Fluorescent Exit Signs

A series of exit signs has been produced which utilize 6-watt fluorescent lamps. Styled for recessed and all kinds of surface mounting, the units are available in one- and two-lamp models. It is claimed that the use of fluorescent lamps affords longer life, less maintenance, and lower power consumption. *The Albert Sechrist Mfg. Co., 4990 Acoma St., Denver 16, Col.*

FIRST NATIONAL BANK *of* ARIZONA

Phoenix, Arizona

ARCHITECT
William D. Reed

18 Balanced Doors in the entrances to the First National Bank of Arizona.

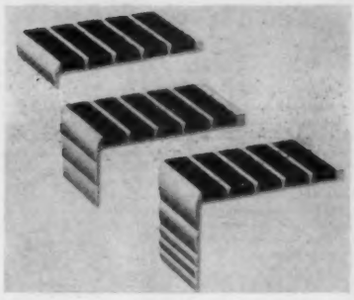
more . . . . Ellison doors

The Door that lets TRAFFIC through QUICKLY

ELLISON BRONZE CO.
Jamestown, New York

representatives in 77 principal cities in the United States, Canada and Puerto Rico

Ellison the BALANCED DOOR



Aluminum Safety Treads

Super-Grit aluminum safety treads derive their name because they are said to contain 65 per cent more abrasive grains than any other tread. The tread comes in two widths, 3 and 4 in., and in three nosing styles, as shown above, ranging in depth from ¼ to 1¾ in. *Wooster Products Inc., Wooster, Ohio.*

Ceiling Diffusers

A new line of ceiling diffusers features curved contour cone design which makes it possible to vary the air pattern from directly downward to full horizontal. This variation is achieved by turning the center cone of the four cones which are standard on both models, Model TMA (fully adjustable) and Model TM (fixed cone). The diffusers are available in a metalescent sprayed aluminum finish. *Titus Mfg. Corp., Waterloo, Iowa.*

Ceramic Facing Tile

Magna-Tile is a new size of ceramic facing measuring 12 by 16 in. Available in 8 matt-glazed colors and 7 ripple finishes, the large tiles reduce the number of grout lines and are said to produce lower installation costs, increased sanitation for breweries and dairies and less exposure to acids. *Stylon Corp., Box 341, Milford, Mass.*

(More Products on page 256)

See how much bigger this classroom looks because of its Daylight Wall (with sliding glass doors). Wonderful solution to the problem of limited space. Emory School, Palm City, California. Architects: Paderewski, Mitchell & Dean.

LOOK WHAT A DAYLIGHT WALL DOES

This light, bright classroom tells you better than any words why 44 out of 45 teachers surveyed in a research project were in favor of daylight walls.

Typical comments:

"Students do not get tired and restless, because there is no feeling of confinement."

"The lighter, brighter surroundings create a good environment for learning."

If you'd like the complete study, read the column at the right and mail the coupon.

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DAYLIGHT WALLS

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...A GREAT NAME IN GLASS

DAYLIGHT WALL FACTS

Daylight is the primary source of light for classrooms. Since most of the United States is cloudy or overcast during most of the year (especially during school months), the main problem is to bring *enough* daylight in. The Daylight Wall *answers* that problem. In a typical 24-foot-wide classroom, on a dark, overcast day with only 500 foot-candles of light on the Daylight Wall, there can be 53 foot-candles or more on even the last row of desks from the windows. That is *23 more foot-candles* of eye-easy light than the minimum recommended by the American Standard Practice for School Daylighting! That's what clear glass will do for you.

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Light needed on various room surfaces

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Window variations to fit the need

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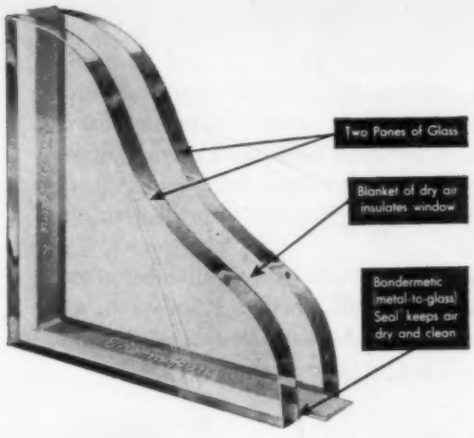

Holiday Motor Hotel, Mechanicsburg, Pa.

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Technical information is available to help the architect and engineer design for the most effective and most economical use of *Thermopane* insulating glass. It is all in our *Thermopane* Manual which will be sent on request. (See coupon below.)

Thermopane is sold by local L·O·F Distributors and Dealers, listed under "Glass" in yellow pages of phone books.

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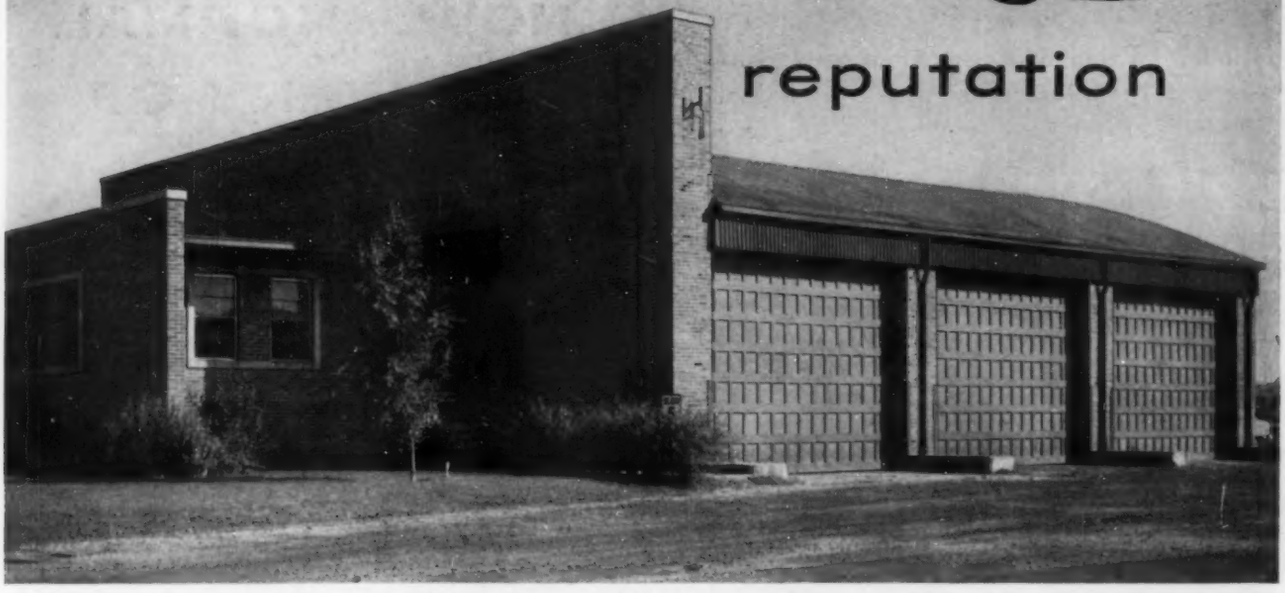
doors that live up to Your reputation



When you specify products for the buildings you design, it pays to specify those you *know* will uphold—even enhance—your professional standing.

Ro-Way overhead type doors, for example.

Ro-Way doors are replete with features preferred by architects to insure owner satisfaction. Features like Taper-Tite track and Seal-A-Matic hinges that guarantee weather-tight closure against side and head jambs. And ball-bearing rollers with Double-Thick treads for smooth, easy performance year after year.

Write in "Ro-Way" and you write in mortise and tenon joints – waterproof glued and steel doweled. Precision-squared muntins, rails and stiles. Rabbeted sections for weather-tight joints. Drum and hand sanded millwork for finest finish. And special heavy-gauge hardware (Ro-Way's own) that's both Parkerized and painted *after* fabrication to prevent rust – inside and out.

Solidly made from selected west coast lumber, these are really beautiful doors. Include Ro-Ways in *all* your commercial and industrial door specifications... confident they'll live up to *your* reputation.

there's a Ro-Way for every Doorway!

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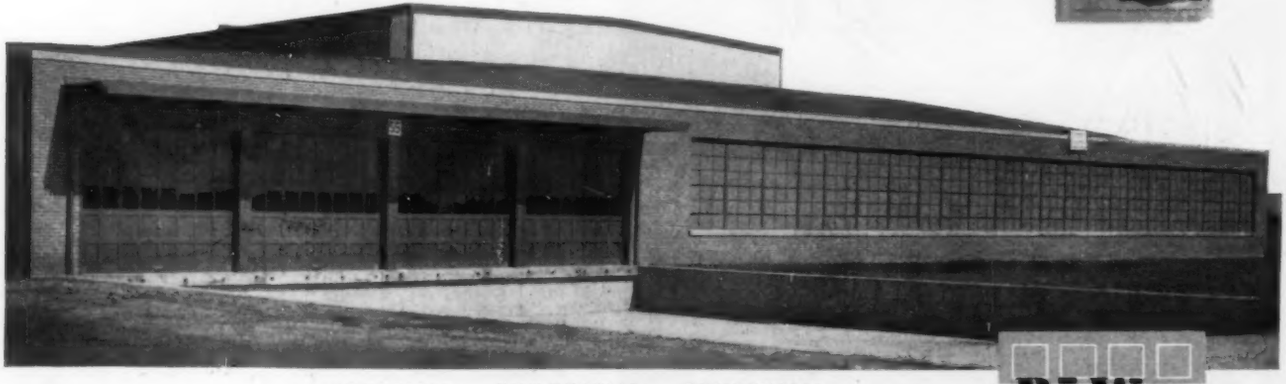

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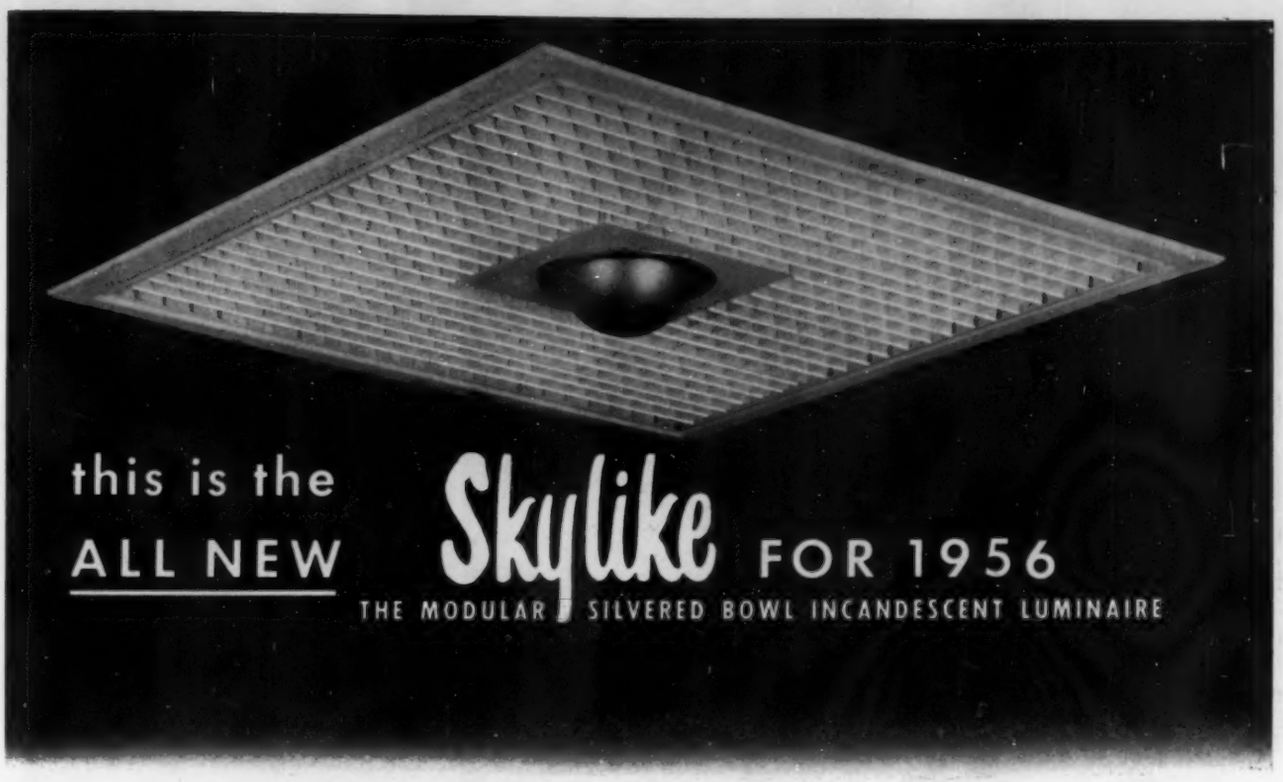

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Skylike is now lower in cost

To meet increasing demands, Skylike has developed new production techniques making possible vastly improved units and lower costs. These advantages are being passed directly on to users. For complete detail write to...

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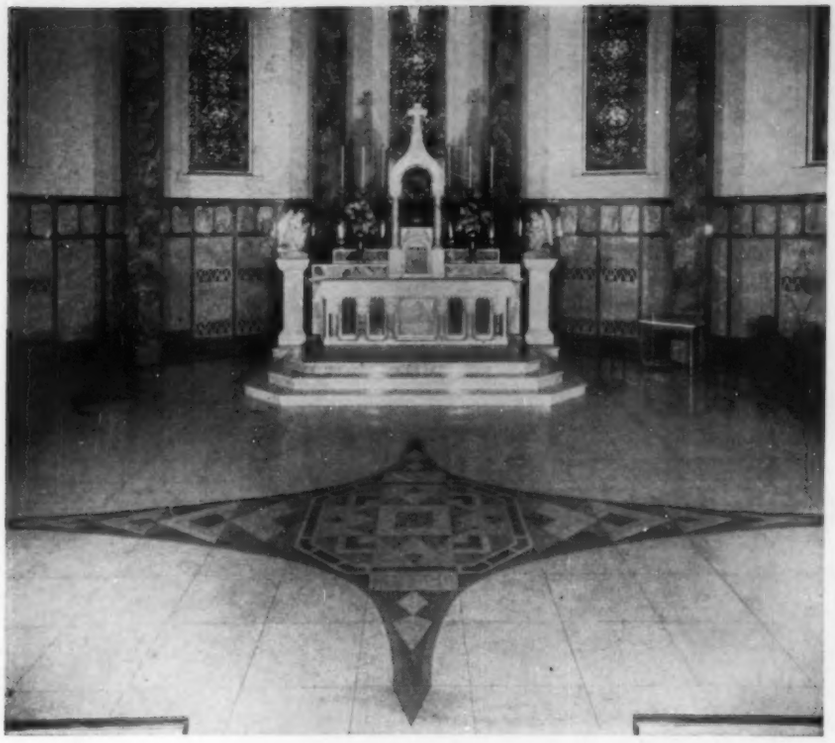

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Long recognized as one of the most durable floorings available, Terrazzo renders a bonus in the form of dignity and beauty.

Aesthetically successful in interpreting the exact requirements of the most exacting architect, Terrazzo is adaptable to any plan, any design, any color combination. For beauty as long-lasting as that of the structure it graces, Terrazzo is unequalled.

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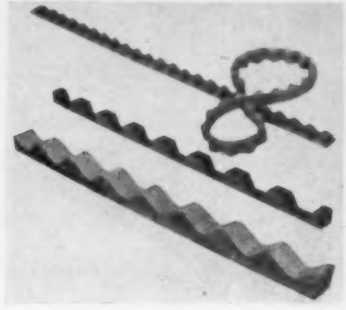
PRODUCT REPORTS

Hydraulic Garage Door

The *Hydro-Door* unit for raising and lowering of overhead garage doors operates on just 10 lb of pressure from home water lines and is said to be absolutely silent and trouble-free because it has no motor, clutch, belts, pulleys, chains or gears to maintain. The unit is installed next to the door, where it is easy to service. It is available with or without radio control. *Hydro-Door, P.O. Box 2217, Santa Ana, Calif.*



Panel Filler Strips

Perm-Seal filler strips for weathertight construction using corrugated, V-beam and ribbed sheeting and panels are made of soft rubber (top two in photo above) and asphalt (bottom). Over 70 different closure strips have been designed to fit the various sheets used today. *The Asphalt Corp. of America, Danville, Ill.*

Bathtub Enclosure

Tubdor is a bathtub or shower stall enclosure which features a vinyl curtain in an aluminum frame which fits against adjacent walls. The curtain snaps onto nylon slides which travel in upper and lower guide rails. A vertical rod attaches the curtain to the slide bars. The curtain can be installed to operate in either direction. *Tubdor, Inc., 4260 24th St., Sacramento, Calif*

(More Products on page 262)

IN OFFICE BUILDINGS

Mile High Center, Denver, Colorado. I. M. Pei, architect. Toplite Roof Panels contribute smart, distinctive styling to the canopy for this modern office building.

IN SCHOOLS

Hillsdale High School, San Mateo, California. John Lyon Reid and Partners, architect-engineers. Toplite panels evenly distribute daylight throughout the gymnasium.

IN HOMES

The activities room in this residence is well-lighted all day long because O-I Toplite Roof Panels permit daylighting without "hot spots" or glare.

IN COMMERCIAL BUILDINGS

T. A. Schutz Company, Morton Grove, Illinois. Seymour S. Goldstein, architect. Toplite panels may be installed in continuous strip, multiple or individual panels. Use a Toplite Panel as you would a lighting strip.

IN CHURCHES

Marian College, Poughkeepsie, New York. Ashton, Huntress and Pratt Associates, Lawrence, Massachusetts, architects. Toplite floods this handsome chapel with shadowless, well-distributed, diffused daylight. Glare of old-fashioned skylights is eliminated.

OWENS-ILLINOIS TOPLITE ROOF PANELS...

for better daylighting everywhere!

Here are five dramatic case histories of Owens-Illinois Toplite Roof Panels in action . . . five diverse examples of how this great advance in daylighting is solving lighting problems all over the country.

Toplite Roof Panels supplement light from sidewalls in deep areas or completely daylight windowless areas. Glare and heat of old-fashioned skylights are eliminated because prismatic glass units built into Toplite "think" before they transmit the sun's rays. Needed North light and the soft, low rays from the South are readily accepted while high summer sun rays are rejected.

The complete story of this important new improvement in efficient utilization of free daylight is available in a new booklet on Toplite Roof Panels. For your free copy, write Kimble Glass Company, subsidiary of Owens-Illinois, Dept. AR-8, Toledo 1, Ohio.

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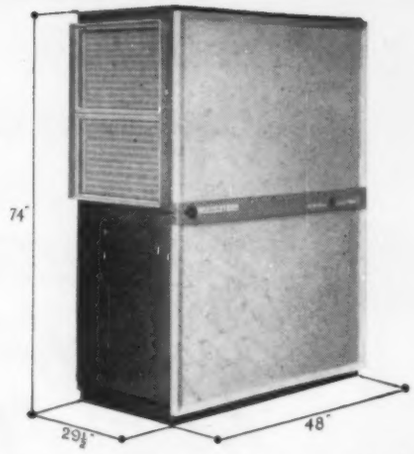
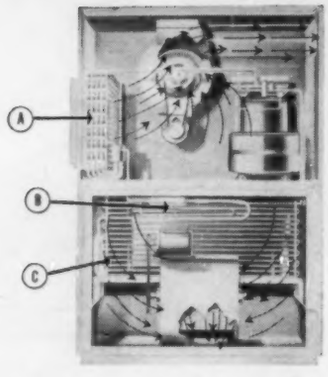
newest way to heat all-electric, fully automatic



Single compact unit, factory-assembled and tested by General Electric. Cabinet is heavy-gauge steel, baked enamel, finished in a cream color. Inside, vital refrigerant cycle is hermetically sealed in a single unit which is protected by a full five-year warranty covering both heating and cooling operations. Available in 3- and 5-ton (nominal) models.



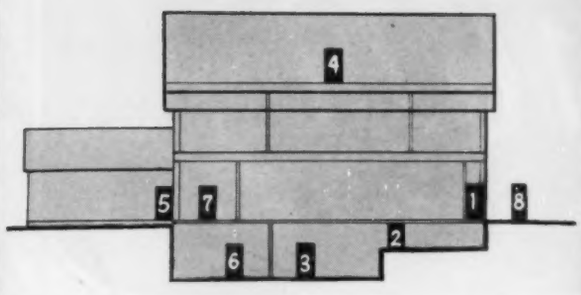
Operates as automatically reversing refrigeration system. On heating cycle, hot compressed FREON gas gives up heat to indoor air circuit at coil **A.** Resulting cooled FREON is passed through capillary tube **B** to reduce pressure and temperature, allowing FREON to pick up heat from outdoor air at coil **C.** FREON is then recompressed and reruns through cycle. When cooling is required, valves controlling FREON flow, automatically reverse. One thermostat setting assures desired year-round temperature.

General Electric Weathertron is a single compact unit (not a combination of units) that heats without burning fuel... cools without using water...uses only air and electricity...circulates filtered air through ducts to every room in the home.

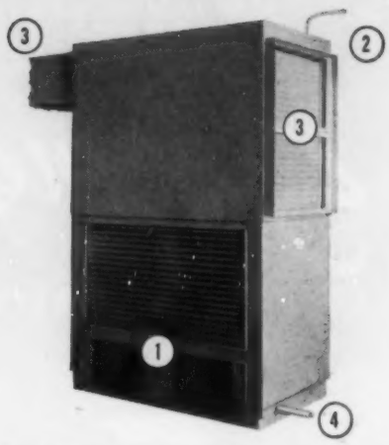
and cool an entire home-

WEATHERTRON

THE GENERAL ELECTRIC ALL-ELECTRIC HEAT PUMP



Gives new design freedom. Weathertron can be placed anywhere, as the sketch indicates: (1) closet; (2) crawl space; (3) basement; (4) attic; (5) garage; (6) playroom; (7) service area; (8) outdoors. Weathertron thus allows more square footage of useable living space in homes of every design.



No installation complexities. All Weathertron needs is connection to outdoor air (1), to power supply (2), and to indoor duct system (3), plus a simple drain for condensed moisture (4). Needs no water towers, pumps, wells or ground coils... no fuel tanks, fuel lines, gas connections, exposed piping or flues.

General Electric Weathertron is the practical result of 25 years of laboratory and field work directed toward making a summer-cooling system do a year-round air conditioning job—but with such important new benefits that it amounts to a new *concept* in air conditioning. How successful General Electric has been in introducing this concept to American home owners and businessmen is shown in the fact that there are now thousands of Weathertrons in homes, stores, offices and factories. These installations have proven the design benefits of Weathertron in a decisive way, and have established an excellent record for dependable, trouble-free performance.

FOR SPECIFICATIONS, SEE SWEET'S FILE 30-S1. Complete Weathertron specifications are listed in Sweet's File. For additional information, call your local G-E Weathertron Representative, listed in the Yellow Pages under Air Conditioning; or write L. Kress Carlbon, General Electric Company, Weathertron Department, 5 Lawrence Street, Bloomfield, New Jersey.

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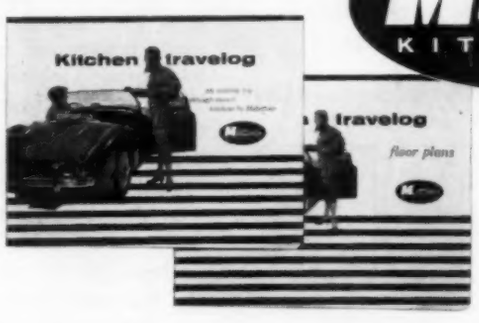

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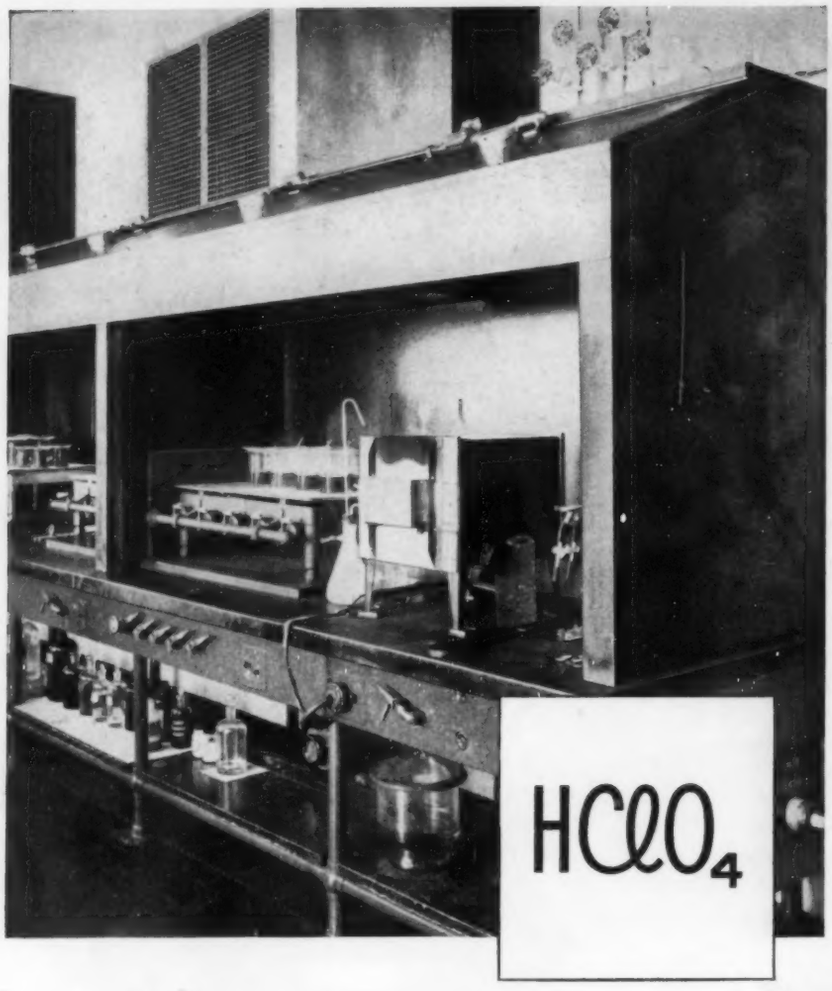

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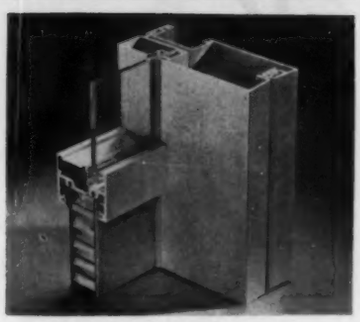
PRODUCT REPORTS



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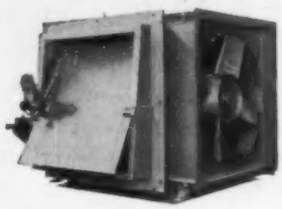

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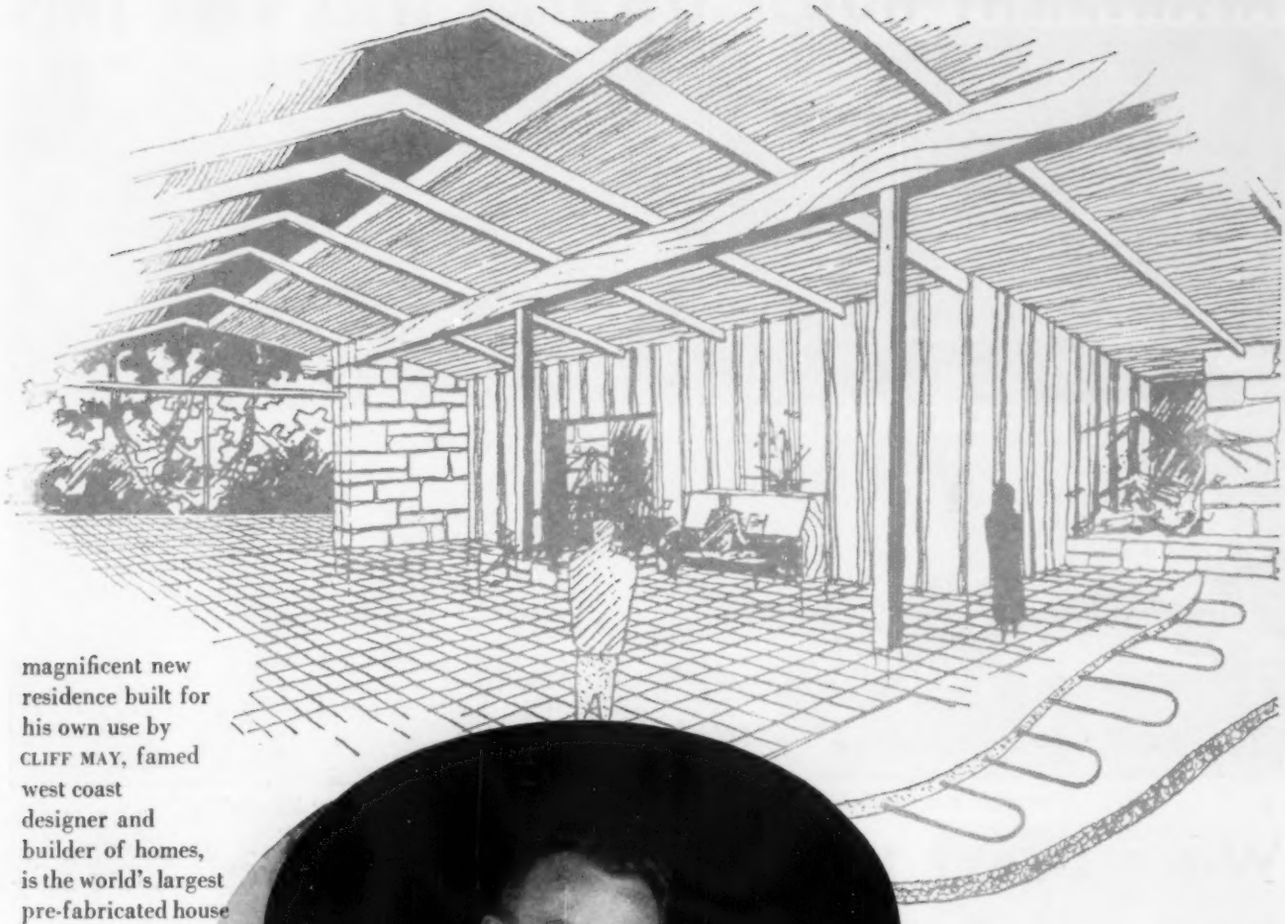

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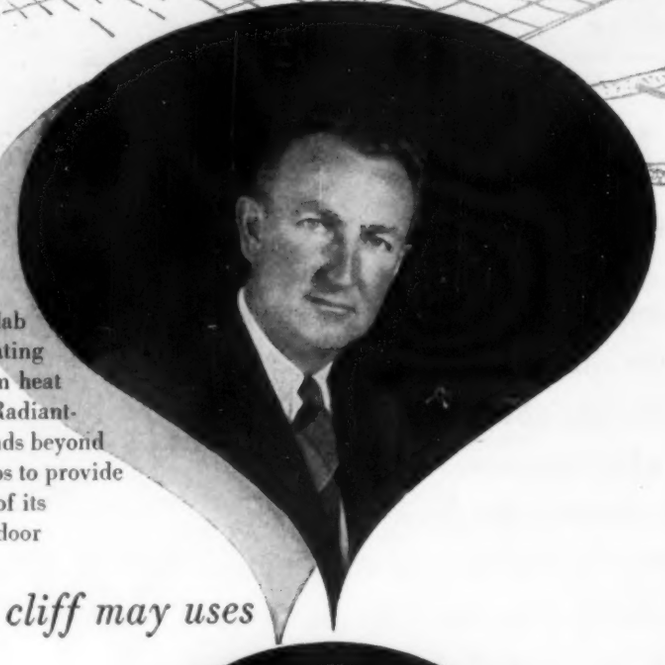

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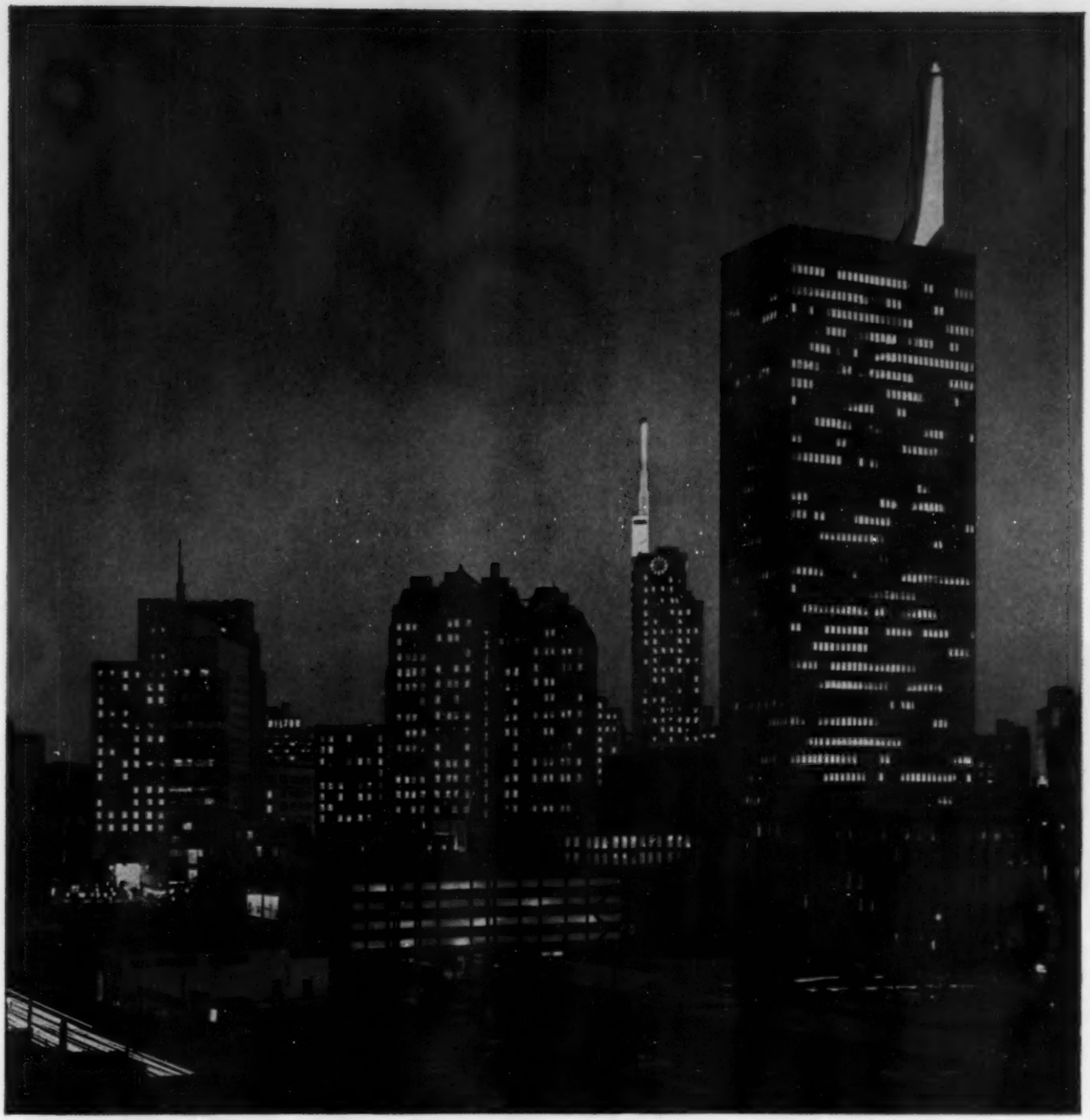

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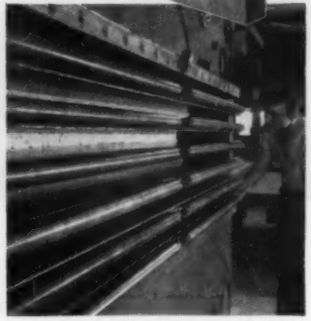
2 Stiles and rails securely fitted. Stiles are 1⅞" instead of 1⅛".

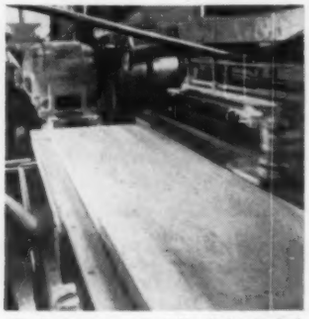
3 Hand-matched face veneers; the panels ⅛" thick—instead of 1/10".

4 A complete coating of resin glue is applied by machine.



5 Accurate assembly is assured by controlled heat and pressure.

6 Doors pass through a complete conditioning cycle in special kilns.



7 Doors are carefully belt-sanded to a cabinetmakers's finish.

8 Special doors are custom-made by experienced craftsmen.

9 Each door must be painstakingly inspected in oblique light.

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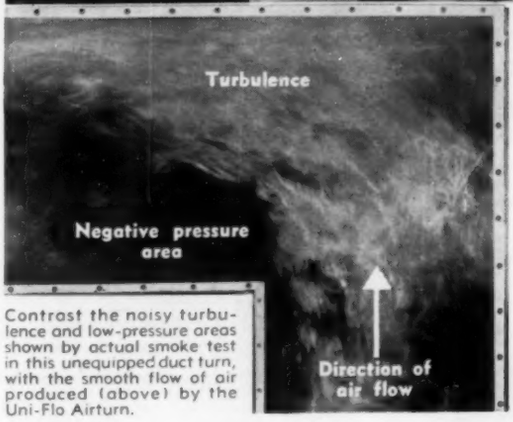

Contrast the noisy turbulence and low-pressure areas shown by actual smoke test in this unequipped duct turn, with the smooth flow of air produced (above) by the Uni-Flo Airturn.

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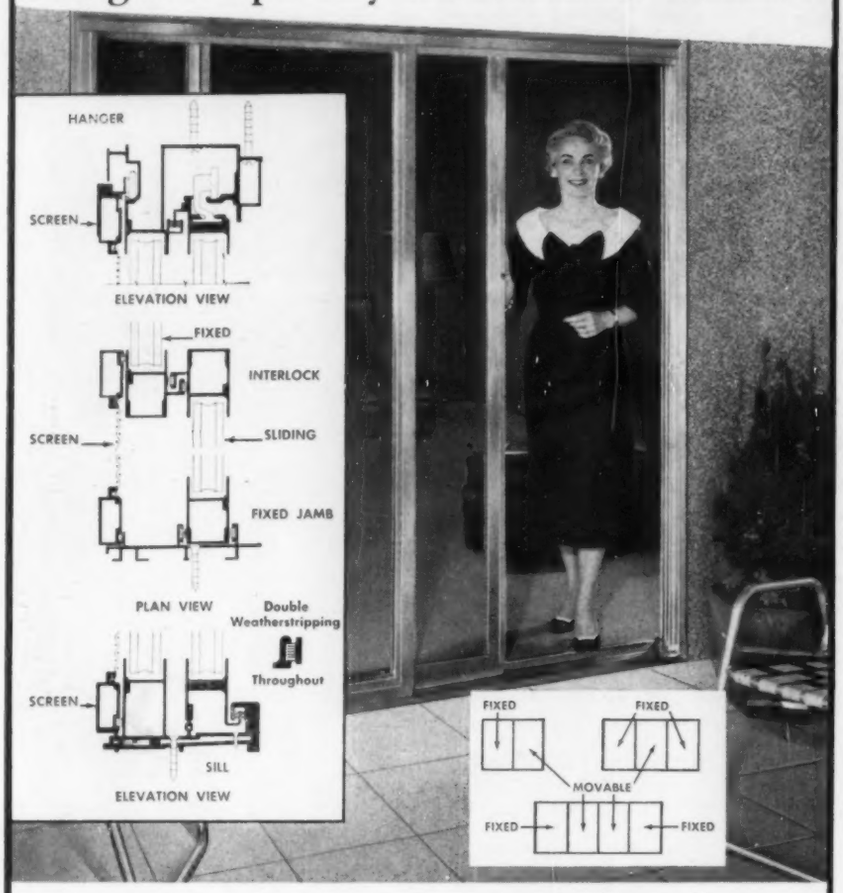

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PRODUCT REPORTS

Automatic Oven Rotisserie

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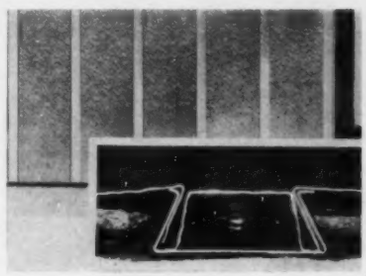

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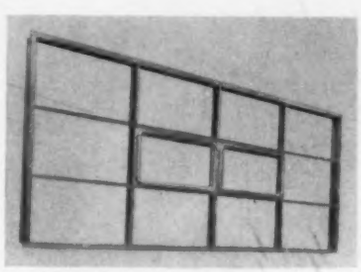

Aluminum Bar Window

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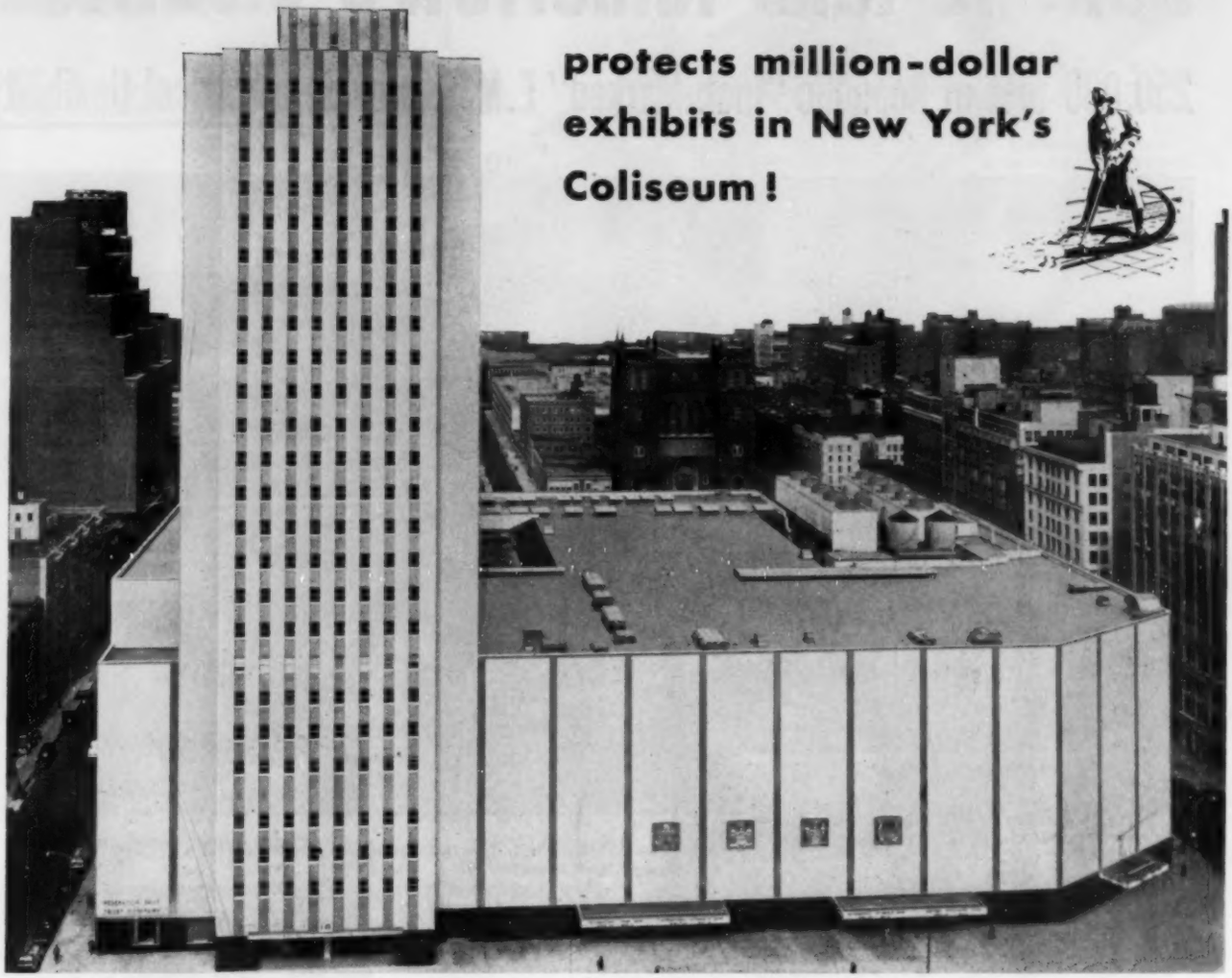

The New York Coliseum, Columbus Circle, New York, N.Y. *Owner:* Triborough Bridge and Tunnel Authority; *Architects:* Leon & Lionel Levy, New York, N.Y.; *General Contractors:* Walsh-Fuller-Slattery, New York, N.Y.; *Roof Deck Contractor:* Keystone Fireproofing Corporation, New York, N.Y.

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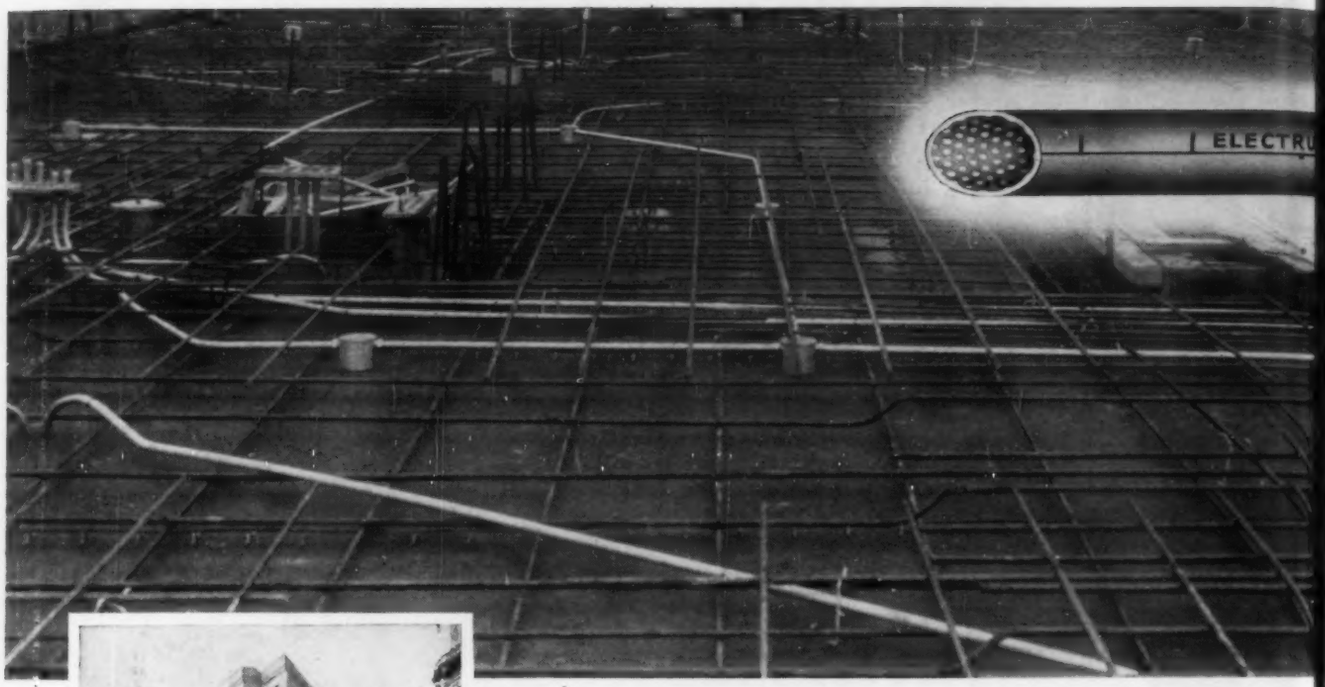

530 Park Avenue Apartment, New York, N. Y. Contractors: Campagna Construction Corp., New York, N. Y.
Architect: George F. Pelham, Jr., New York, N. Y.

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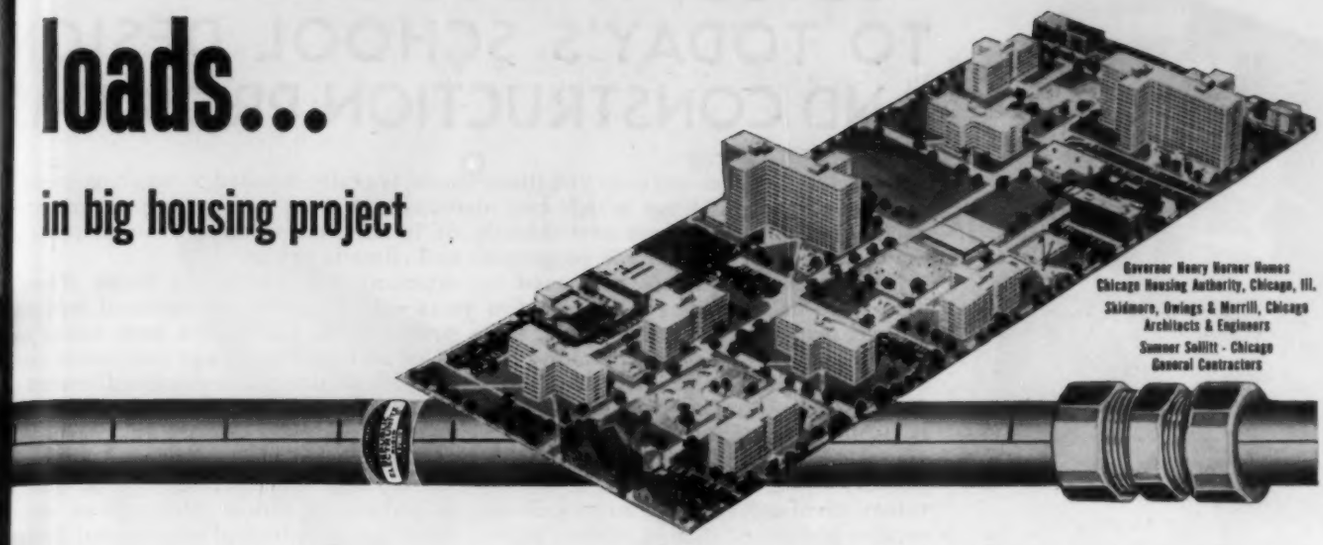

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Skidmore, Owings & Merrill, Chicago
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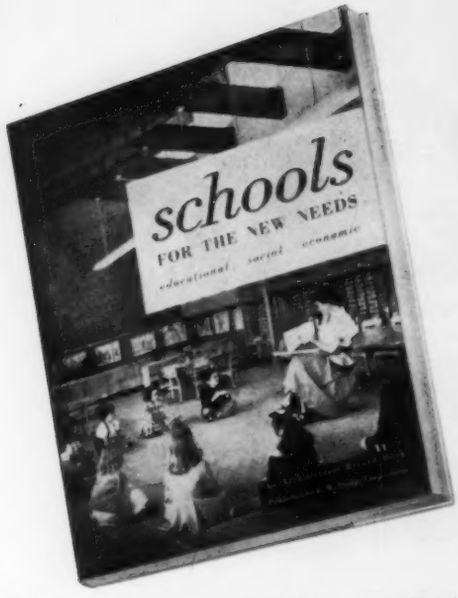

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Schools for the New Needs gives a new insight into the problems and solutions of planning better schools at less cost. Its absorbing test is refreshingly clear of the involved technical jargon usually associated with works in this field.

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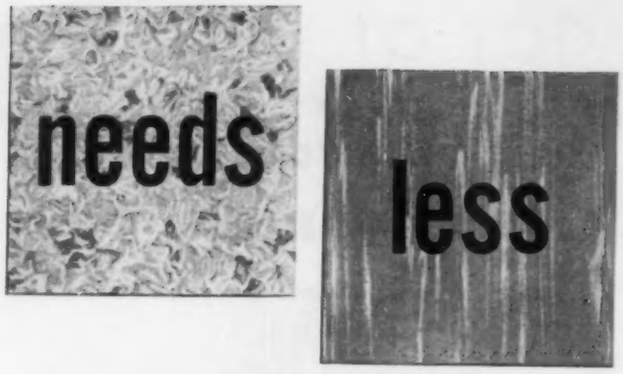

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OFFICE LITERATURE

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Reznor Gas Heaters (AIA 30-C-43)
Catalog GN-56 covers the complete Reznor line of gas-fired commercial and industrial heating equipment. 24 pp. *Reznor Mfg. Co., Mercer, Pa.**

Onan Electric Plants
Catalog A-428 describes complete line of Onan electric generating plants, with model selection guide giving model number, description, starting method, type of engine and dimensions and weights of each plant. 8 pp. *D. W. Onan & Sons, Inc., Minneapolis 14, Minn.**

True Efficiency in Building
Contains a check list which points up in advance every important phase of a construction program and answers 20 questions about building programs. 22 pp. *Building Construction Employers' Assn. of Chicago, Inc.* (H. Mayne Stanton, Exec. Secy.), *228 No. LaSalle St., Chicago 1, Ill.*

Pre-cast Insulated Stack
Engineering file on insulated stack for commerce and industry is divided into four sections: general information, specifications and ordering data, installation instructions and performance and physical characteristics. 80 pp. *Van-Packer Corp., Bettendorf, Iowa.**

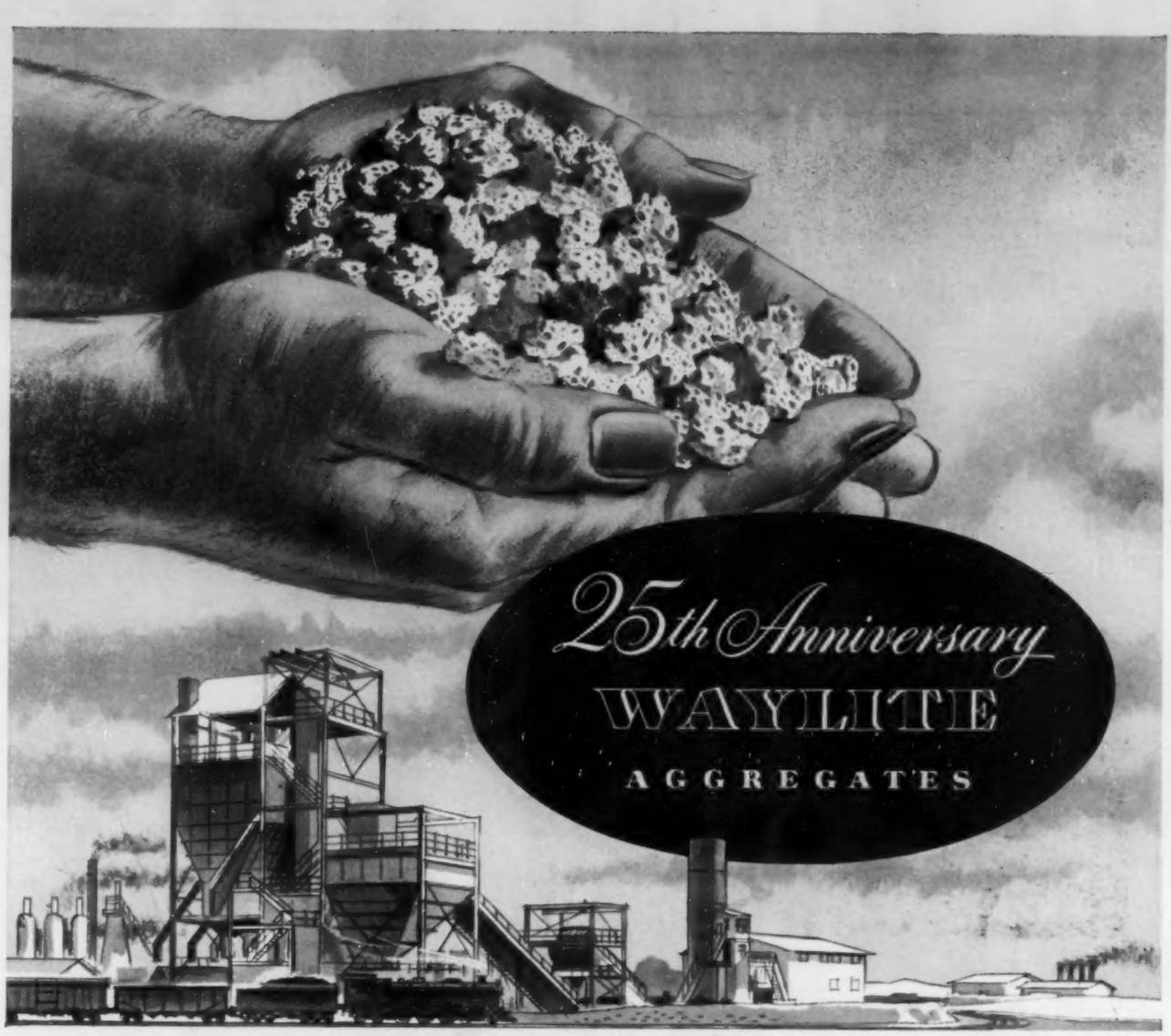
Antenna Accessories
Catalog 257 diagrams typical TV antenna installations and shows a complete line of accessories used in practical installations. 8 pp. *Javex, P.O. Box 646, Redlands, Calif.*

Aluminum Roof Exhausters
Presents description, ratings and dimensions of aluminum roof exhausters. 4 pp. *Iron Lung Ventilator Co., 5403 Prospect Ave., Cleveland 3, Ohio.*

Product Literature Competition
Technical Bulletin No. 75 lists 900 catalogs classified by product and available through reply cards. 176 pp. *The Producers' Council, 2029 K St., N.W., Washington 6, D. C.*

New Grading and Bundling
(AIA 19-D-2) Graphically illustrates the new specifications for Western Red Cedar siding which became effective early this year. 4 pp. *Western Red Cedar Lumber Assn., 4403 White-Henry-Stuart Bldg., Seattle 1, Wash*

(More Literature on page 278)



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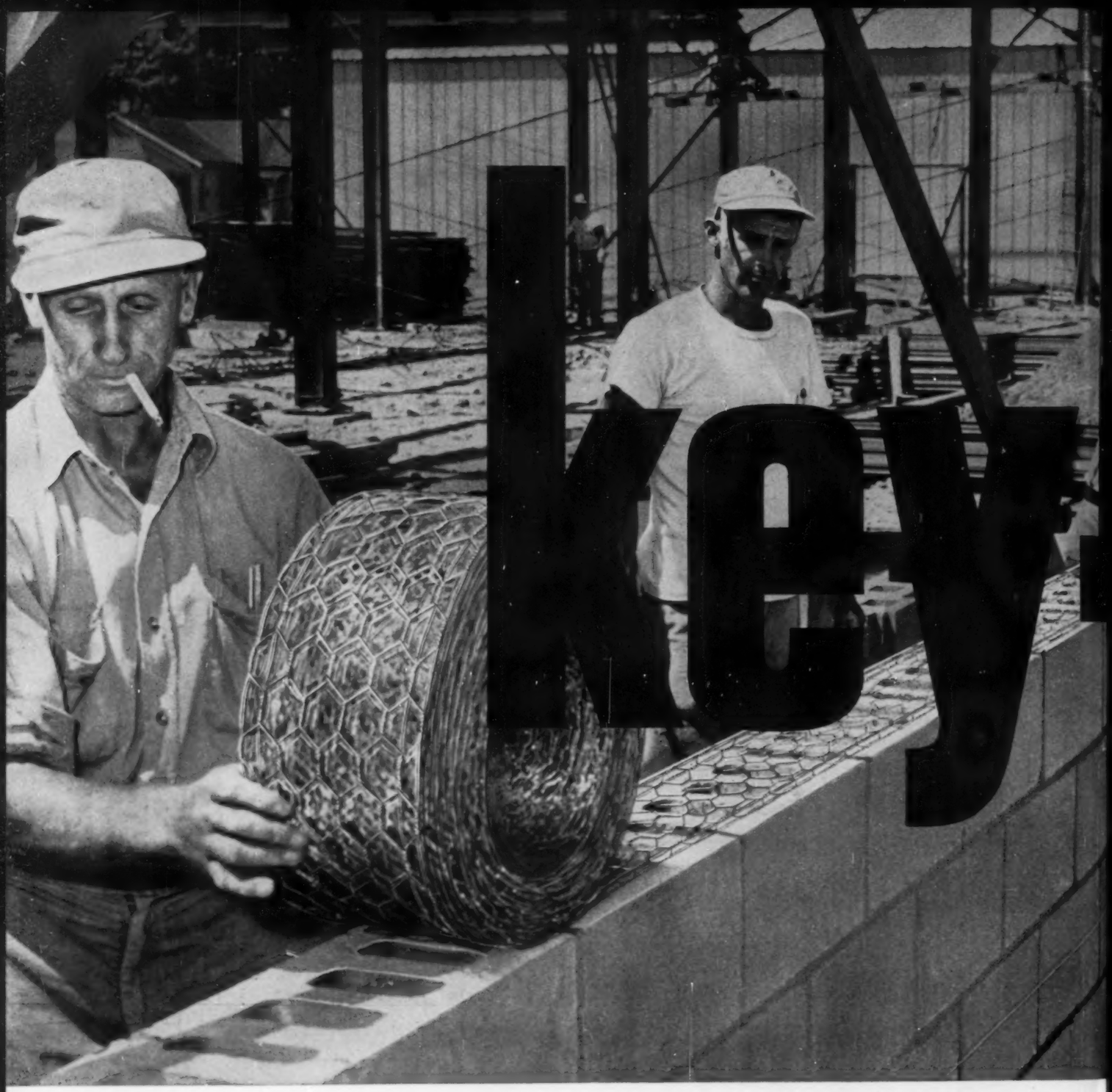

Facts You Should Know About Masonry Reinforcement

By Edwin L. Saxer: Professor and Chairman, Civil Engineering Department, University of Toledo

For some time, there has been a growing tendency to rely on steel reinforcing in mortar joints to improve the capacity of masonry walls to resist the stresses which develop.

The usage of joint reinforcement has often proven unsuccessful in the past. The chief reason for this has been the failure to use reinforcement in more than every third or fourth joint—a practice which provides little or no benefit to the intermediate joints.

A contributing factor in many cases has been the inability of some forms of reinforcing to develop adequate bond strength.

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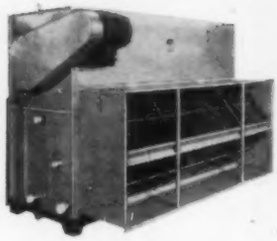
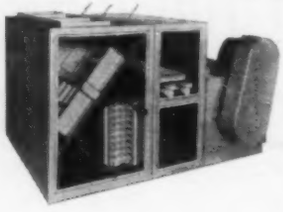


Available in 12 models from 800 CFM to 28,800 CFM. Floor-standing vertical and ceiling-hung horizontal models with direct expansion, water or steam coils. Face and by-pass damper sections, mixing boxes, spray type humidifiers and filter sections available for all units. Models AH-10 through AH-32 available with *Inner-Fin* coils.

'MZ' MULTIZONE UNITS

Available in 9 sizes covering a range from 2,560 CFM to 28,800 CFM, Multizone Units parallel the standard Bush HAH Air Handling units, using the same proven blower sections and accessories such as filter sections and mixing boxes. Zone dividers may be arranged as desired — vertical, horizontal or a combination of both. Entire interior is well insulated and undercoated. Units can be shipped sectionally when this is desired to facilitate installation.



'CR' REMOTE AIR CONDITIONING UNITS

Provide quiet, economical year 'round air conditioning for all types of multi-room buildings. Units are available in vertical floor and horizontal ceiling models . . . feature individual room control . . . are easily incorporated in new or existing buildings.

Request Catalogs containing complete specifications on units shown.

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OFFICE LITERATURE

Painting Acoustical Surfaces
(AIA 25-B-21) Specification sheets include information on painting acoustical surfaces, including ceiling tile, acoustical plaster and aggregate block. 4 pp. *Luminall Paints, Chicago 9, Ill.*

Standard Architect Glazing Specs
Specification data file for glazing aluminum, steel and wood sash includes a list of 11 glazing rules as a guide to obtaining leak-proof windows. *W. S. McGuffie & Co., 3400 Theurer Court, Cleveland 9.*

Fine Plumbing Fixtures
Condensed catalog shows baths, lavatories, fountains, toilets, sink and cabinet combinations, wall and base cabinets, sinks, laundry trays, wash sinks, urinals and brass fittings. 24 pp. *Eljer Co., 3 Gateway Center, Pittsburgh 22, Pa.**

Hospital-Lites (AIA 31-F-23)
Catalogs different models, uses and installations of universally adjustable Hospital-Lites. 8 pp. *Swivelier Co., Inc., 43-34th St., Brooklyn 32, N. Y.**

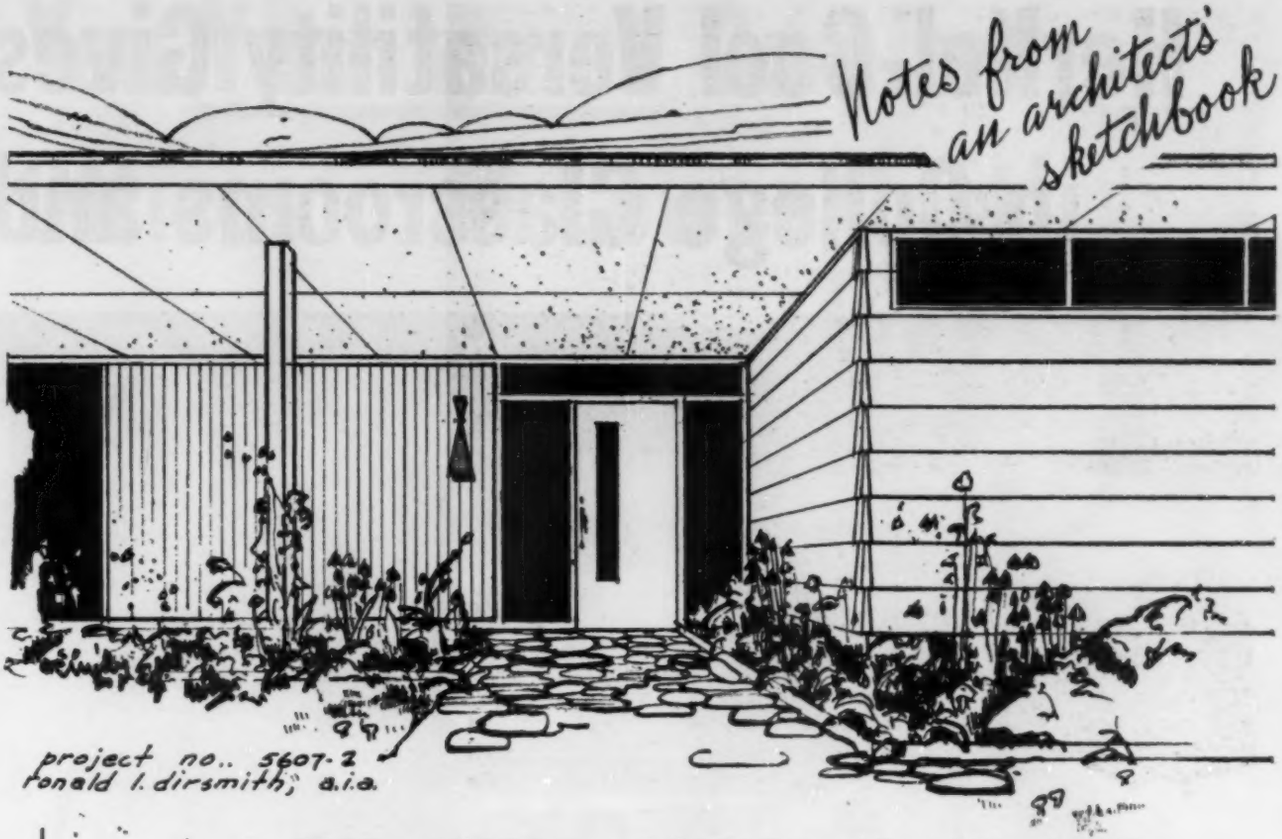
"Seal-Kote" Vinyl Plastic Paint
Bulletin LL-2421 reports on "Seal-Kote," which is available in eight colors for use on a wide range of exterior surfaces. *The Woosler Sealkote Co., Woosler, Ohio.*

Polyglas
Bulletin 56 describes the effect of 66 of the most commonly encountered elements on *Polyglas*, a structural reinforced plastic. *Modular Plastic Corp., 1635 Westminster, Detroit 11, Mich.*

Permalok Nailable Stud System
Describes a 24-gauge steel stud to which metal lath, gypsum lath or almost any type of panel can be nailed; also illustrates other parts of system. 4 pp. *Penn Metal Co., Inc., 205 E. 42nd St., New York 17, N. Y.**

Problems of Natural Light, Sunshine
Bulletin enumerates the advantages of *Thru-Vu* vertical blinds for controlling daylight and heat. *Thru-Vu Vertical Blind Corp., Box 266, Rye, N. Y.*

Western Pine Grading Rules
New edition incorporates all supplemental rules adopted since January 1953. 158 pp. 25¢. *Western Pine Assn., Yeon Bldg., Portland 4, Ore.*



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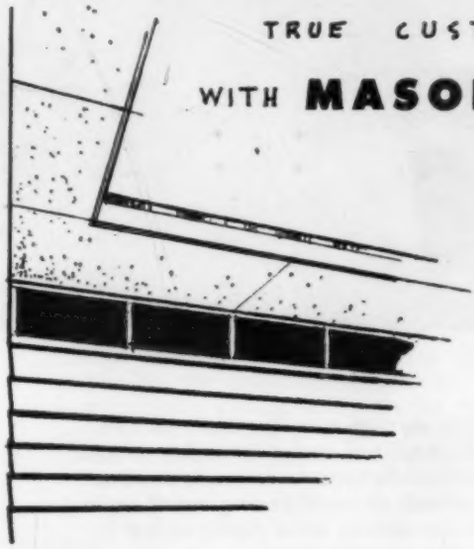

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Every exterior can be distinctive—when you work with Masonite's broad selection of top-quality siding materials. They defy time and the weather.

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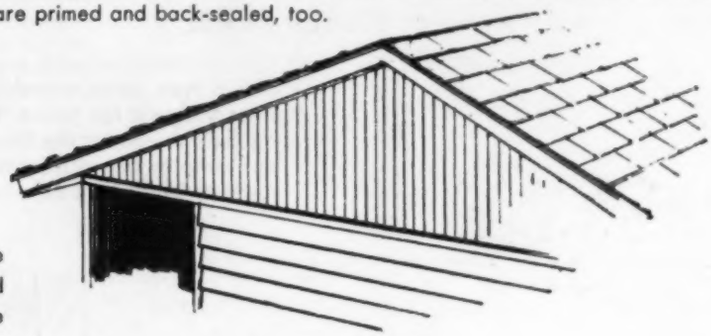
Never a blemish on strong, straight Shadowvent® Siding. Aluminum mounting strip speeds application, creates attractive shadow line. Panels are primed and back-sealed, too.



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Custom quality protection and appearance for homes in every price bracket. Savings in original cost, in application and painting, in maintenance. Read about these dense, grainless panels in Sweet's, or consult your file (A.I.A. 23-L) or send the coupon today.

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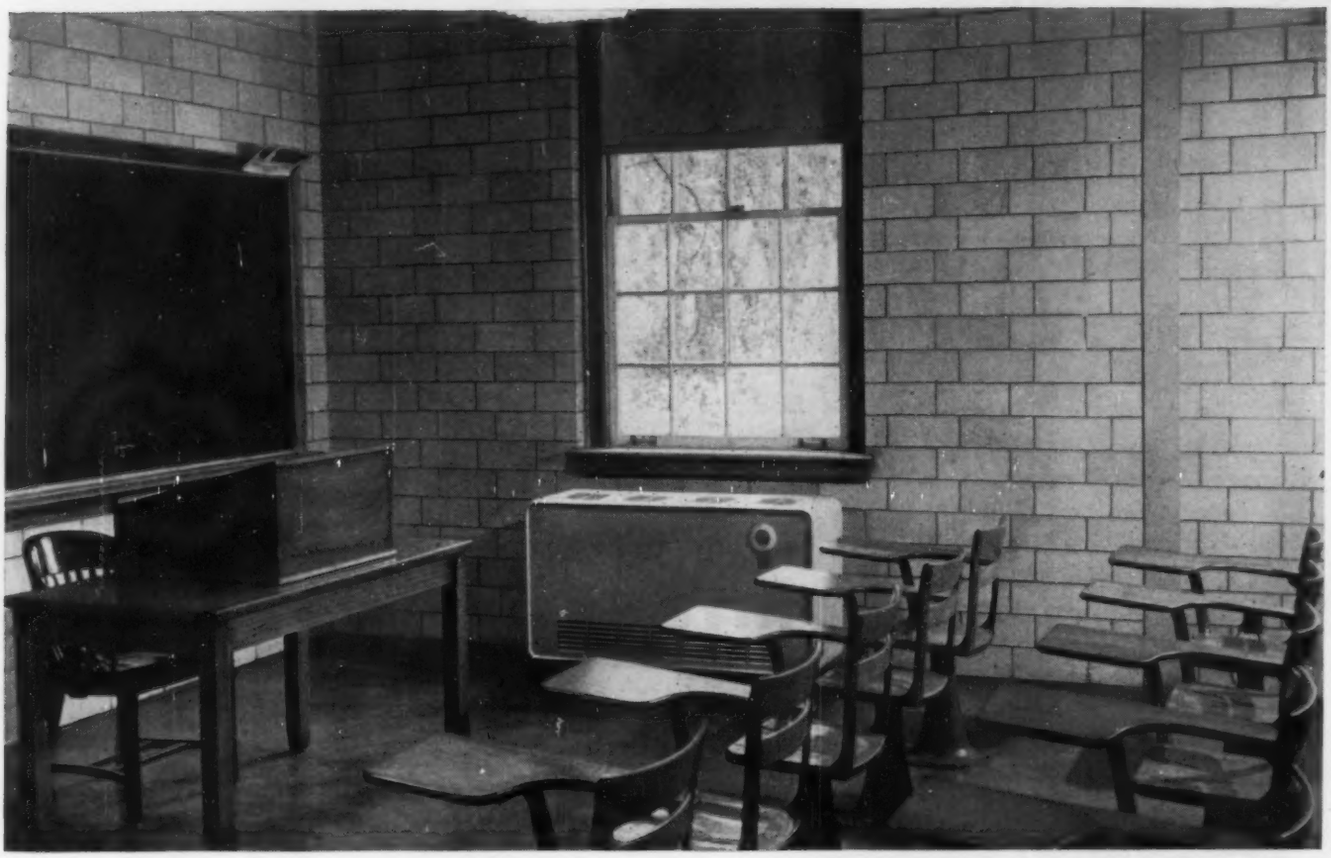
HerNel-Cool Versatility Gives in College Classrooms and



PROVED IN USE

The HerNel-Cool unit was first designed as far back as 1945, and it has been developed, modified and thoroughly tested over the past ten years. First installations were made in classrooms throughout the South, where air conditioning needs could put them to the stiffest tests. Conditions were rigorous, but the HerNel-Cool unit exceeded every requirement!

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You Year 'round Comfort Offices . . . at Lower Cost!

Automatic, trouble-free unit combines summer chilled water cooling with heating, ventilating and natural cooling.

If summer heat and humidity "bog down" your school's activities, perhaps now is the time to consider air conditioning. And we are sure you will find that the new HerNel-Cool unit will help you solve the problem effectively and economically.

The HerNel-Cool unit system does the entire job of chilled water cooling, heating, ventilating and natural cooling for every month of the year. It is designed, built and priced specifically for schools . . . and it is backed by Herman Nelson's 36 years of specialized experience in providing ideal classroom climates. The cost, you will find, is far less than separate heating and air conditioning systems . . . both for initial installation and for operation.

HerNel-Cool units provide individual temperature control for each room, automatically. In the colder months, they function as heating-ventilating-natural cooling units using hot water. When temperatures soar, they switch automatically to *mechanical* cooling with chilled water circulating in the same piping. Controls, pneumatic or electronic, are factory mounted and adjusted—the units are essentially maintenance-free.

And this is important, too. The HerNel-Cool system has the advantage of *flexibility*. You need not undertake a large scale program. Units can be installed now where they are needed most—the system can later be extended whenever you wish.

Would you like more information? We will be glad to send you our new 20 page book, "HerNel-Cool AIR CONDITIONER for Schools". Just write us, or mail the coupon below.

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System of Classroom Cooling, Heating and Ventilating

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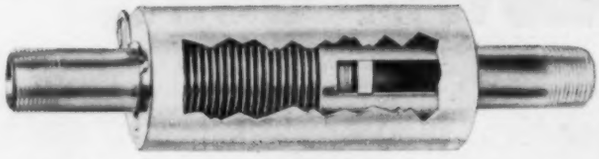
Design Effective Expansion Control into Steam and Hot Water Heating Systems–



Model H, High Pressure Type—for pressures to 150 psig, temperatures to 750°F. Handles total motion to 1¾" (1½" compression, ¼" extension). Available with all commonly used fittings. Pipe sizes: ¾" through 3".

Model L, Low Pressure Type—for pressures to 40 psig, temperatures to 250°F. Handles total motion to ⅝" (½" compression, ⅛" extension). Available with all commonly used fittings. Sizes: ¾" through 2".

with Flexon Expansion Compensators

IMPORTANT DATA ON EXPANSION CONTROL

Heating System Expansion Control Guide

Flexon Expansion Joint Design Guide

For further information, write for these descriptive bulletins.

Expansion Problems in both high and low pressure steam and hot water lines are easily solved by specifying Flexon Expansion Compensators. Use the low pressure unit for horizontal lines—the high pressure type for both risers and horizontal runs.

These units have been especially designed to replace outmoded methods of expansion compensation; slip joints, swing joints, pipe loops and bends become things of the past. The objectionable noise of pipe creeping caused by uncontrolled expansion is eliminated and you are assured of long maintenance-free leakproof service.

Years of actual operating experience in major multi-story projects, in addition to exhaustive laboratory tests, have proved out the quality of design and construction of Flexon Expansion Compensators. You can specify "FLEXON" with confidence, knowing they will outlast the life of the piping.

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proved in service and backed by over 54 years manufacturing experience

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FORMERLY CHICAGO METAL HOSE CORPORATION
Manufacturers of flexible metal hose and conduit, expansion joints, metallic bellows and assemblies of these components.
In Canada: Flexonics Corporation of Canada, Ltd., Brampton, Ontario

THE RECORD REPORTS

WASHINGTON TOPICS

(Continued from page 48)

contained an amendment which put Congressional support squarely in back of the government's industrial dispersal policies. The action followed extended floor debate. New industrial facilities built by the Federal government or financed in part through Federal aid are affected.

In this connection, H. Christian Sonne, an official of the National Planning Association, told a Congressional subcommittee that little or no progress has been made in planning the dispersal of industrial facilities needed to minimize the danger of nuclear attack. Reason for the lag in the country's nonmilitary defense program is failure to grasp the concept of this program and failure to create the appropriate government organization structure to carry it out, he charged. Mr. Sonne called for a single agency responsible for all phases of this type of defense and responsible for planning, policy making, coordination and supervision.

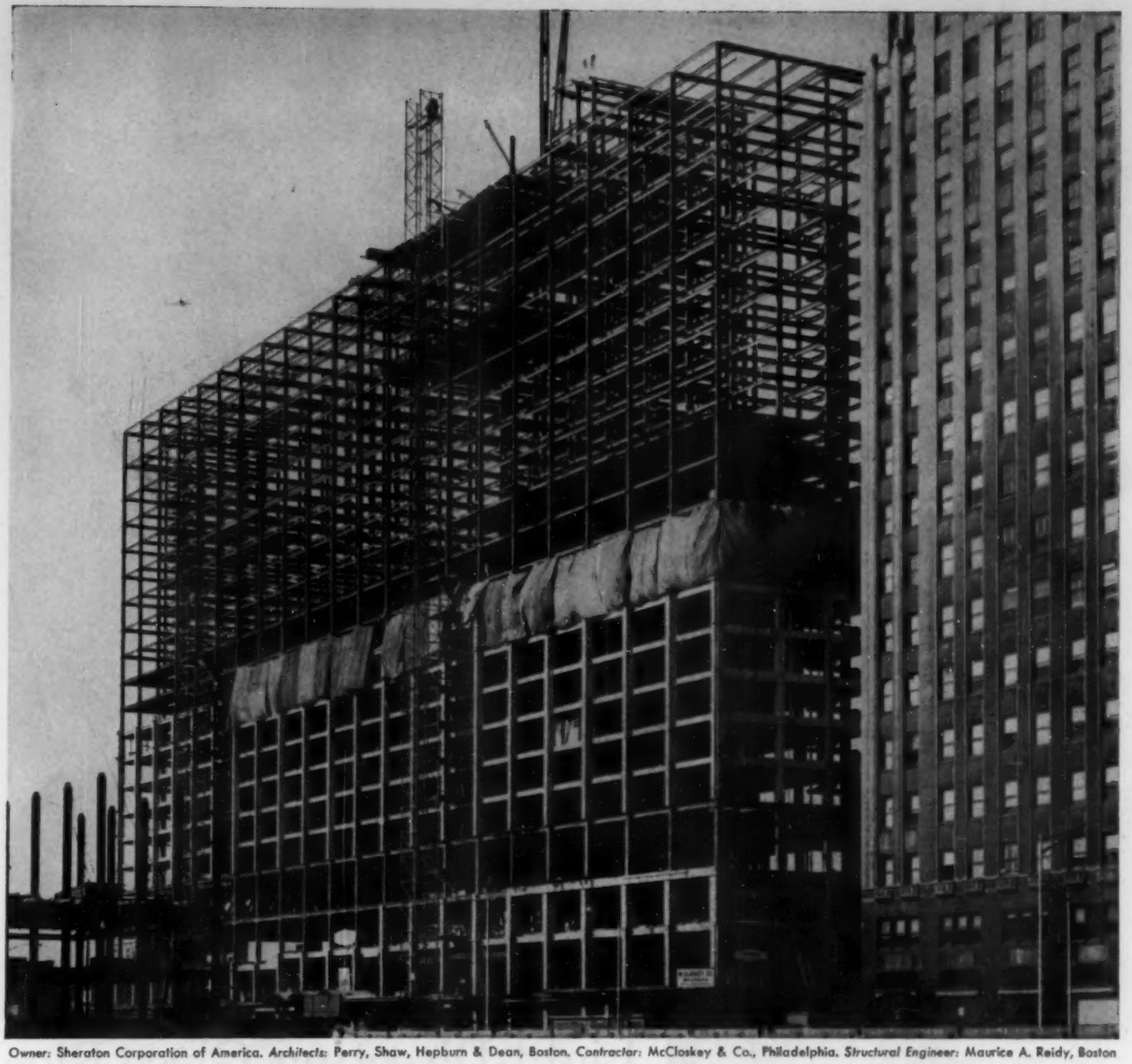
Military Housing: Whence?

The Congress was showing increasing concern over the possibility of too many military housing units in the wrong places. Both Senate and House armed services committees warned of the dangers of overproduction. One group, the Senate committee, came out flatly in favor of appropriated fund housing for military construction as against privately-financed units built with insured loans. It said a $13,500 unit amortized over a 25-year period under the Capehart Act would cost $5000 more than a similar unit built with appropriated funds. The additional cost involved in a program of 200,000 units, with land and administrative costs figured in, would be around $4 billion, the committee said.

Hill-Burton: $125 Million

The Congress also appropriated $125 million to aid states through the Hill-Burton Act with their hospital construction. Largest share of this money ($102.8 million) was earmarked for hospitals and other health facilities authorized under the original Act; the remaining amount will go for diagnostic rehabilitation, and nursing home facilities authorized under the amendment of last year. This law also contained $1 million for techni-

(Continued on page 286)



Owner: Sheraton Corporation of America. *Architects:* Perry, Shaw, Hepburn & Dean, Boston. *Contractor:* McCloskey & Co., Philadelphia. *Structural Engineer:* Maurice A. Reidy, Boston

First Building in Philadelphia Erected With High-Strength Bolts

Here, shown under construction, is the Sheraton Hotel, the first multi-storied structure to be erected in Philadelphia by means of time-saving high-strength bolting. Bethlehem High-Strength Bolts connect the structural members of its 3900-ton framework.

The 21-story hotel is part of the Penn Center development in the heart of downtown Philadelphia. It has three floors of public rooms, 1000 guest rooms, and a top story of luxury suites with balconies, including a Presidential Suite.

Bethlehem High-Strength Bolts save time in steel erection because the joints can be made rapidly. In fact, a high-strength bolt, used with hardened washers, can be installed in seconds. While a holding wrench grasps the bolt-head, the nut is driven to predetermined tension with a calibrated pneumatic impact wrench. It's that simple!

Besides, with high-strength bolting, there's no fire hazard involved. And the bolting operation is less noisy than riveting, making it an ideal erection method for hospital and school zones.

Bethlehem High-Strength Bolts are made of carbon steel, and are heat-treated by quenching and tempering, to meet the requirements of ASTM Specification A-325. They are furnished in sizes to meet every construction need.

If you would like to have full information about erecting steelwork with Bethlehem High-Strength Bolts, please telephone the nearest Bethlehem sales office. Or write direct to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY
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On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
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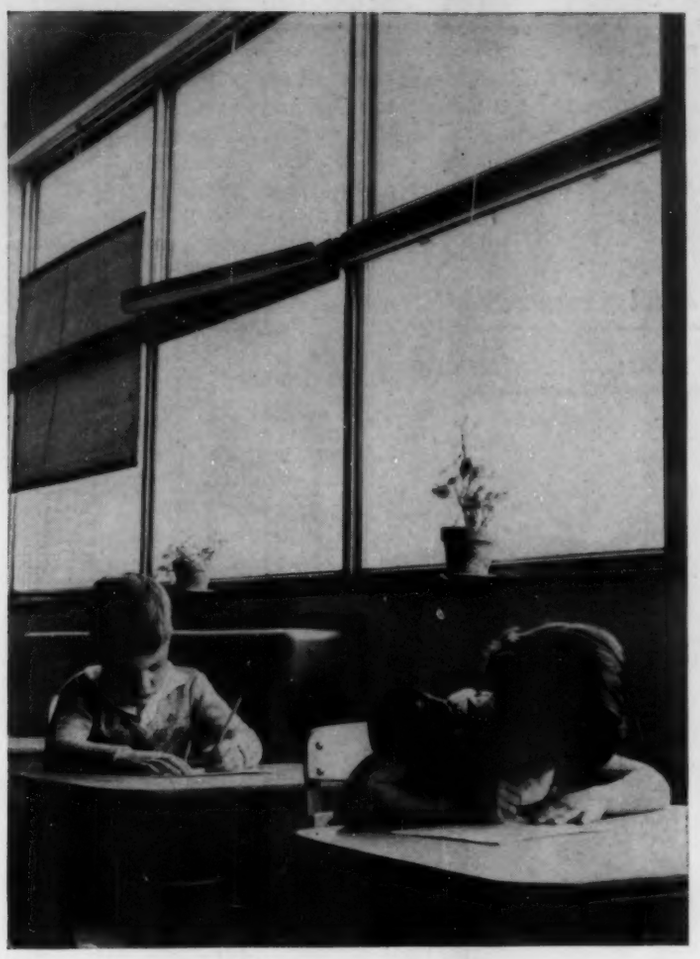
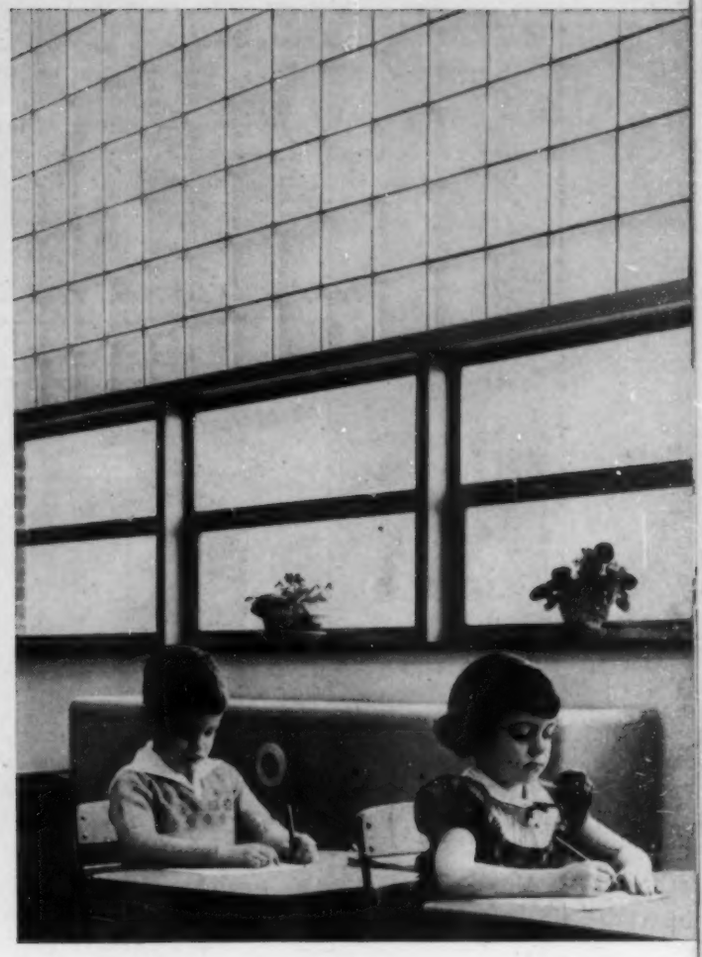
BETHLEHEM STEEL

Light-Directing Glass Blocks..





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You see in the enlarged cut-away view at the left how PC Glass Blocks "discipline" daylighting. Tiny prisms, pressed into the inner faces of the block, collect the daylight, bend the rays and direct them upwards. Installed in panels, these *light-directing* Glass Blocks bounce daylight off the ceiling, and distribute it uniformly throughout the room. This *balanced* illumination bans glare and high-contrast shadows. Students are relaxed and receptive. They see better, learn better.

This modern daylighting medium is something *everyone* concerned with schools should know about. Our new booklet, *The 3 R's and Daylighting*, tells the complete story. It's yours for the asking. Fill in and mail the coupon below for your copy.

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Please send me "The 3 R's and Daylighting."

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Address_____

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WASHINGTON TOPICS

(Continued from page 282)

cal services — engineering studies, etc. — performed by the Housing and Home Finance Agency under the government's program of helping states build schools in Federally-impacted areas.

More for Community Facilities

HHFA's Community Facilities Administration did much better in its planned public works department than in former years. A sum of $7.5 million was voted to continue building up the reservoir of non-Federal public works plans and specifications. Only $3 million was voted for fiscal 1956 and $1.5 million for 1955. CFA loans out the money interest-free to states or their political subdivisions to cover full cost of plan preparation. Repayment of the loan begins with the actual start of construction. At the end of June, the agency had approved a total of 79 projects in the entire third advance loan program. This activity involved advances amounting to $1,591,601, and covered future construction estimated to cost $116,938,779.

A Push for Lease-Purchase

The lease-purchase program administered by General Services Administration and the Post Office Department is expected to run more smoothly with a minor change in the law. The amendment approved removes the requirement that the Budget Bureau review detailed terms of agreements after House and Senate public works committees have okayed them. The Bureau still retains an initial review of proposals, however, to determine if projects are necessary and in conformity with the program of the President.

BRAB REPORTS TO FHA ON SEVEN SPECIAL PROJECTS

Seven reports on special studies made for the Federal Housing Administration by the Building Research Advisory Board provide new data on some construction problems familiar to all architects. The reports will have a special significance to the extent to which their recommendations are incorporated in the broad revision of FHA's Minimum Property Requirements now going forward. FHA plans to have this first major overhaul of its MPR's completed by September. Additional months will be required for review and announcement of final decisions is expected around the first of next year.

BRAB formed advisory committees on each subject to turn out the comprehensive reports. FHA may, at its discretion, use the material as a basis for the MPR reforms.

Titles of the reports:

— *The Effect of Automatic Sequence Clothes Washing Machines on Individual Sewage Disposal Systems.*

— *Performance Characteristics of Domestic Water-Heating Equipment.*

— *The Installation of Wood Block Finish Flooring by Adhesive Bonding.*

— *Cracking of Concrete Face Brick and the Development of Data Necessary for the Establishment of Criteria for its Manufacture and Installation.*

— *The Anchorage of Exterior Frame Walls to Various Types of Foundations.*

— *Vapor Barrier Materials for Use with Slab-On-Ground Construction and as Ground Cover in Crawl Spaces.*

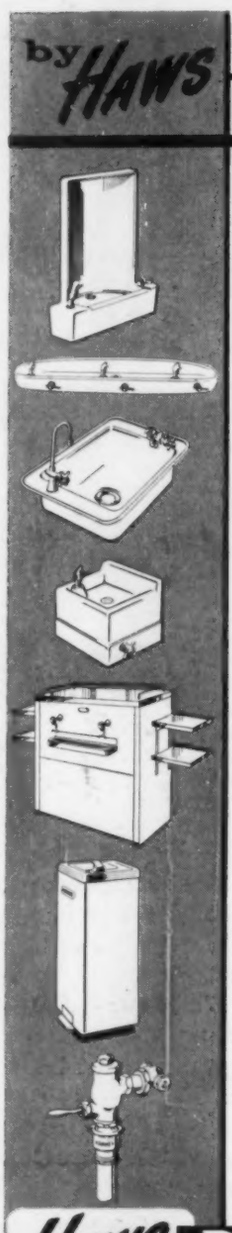
— *Protection Against Decay and Termites in Residential Construction.*

These reports are available from the Building Research Institute, 2101 Con-

(Continued on page 292)

by HAWS

Leading Designs... for Leading Architects



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- Raised fountain head: angle stream, shielded, anti-squirt... prevents direct mouth contact.
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HAWS provides drinking water facilities of the finest design for today's architectural planning. Handsome wall and pedestal models meet every design requirement—indoors or out, industrial or institutional! Up-to-the-minute styling by skilled craftsmen make HAWS Fountains the leaders!

All HAWS Fountains contain outstanding sanitation features, insuring a lifetime of unequalled protection. Find out what HAWS drinking water facilities can do for your projects!

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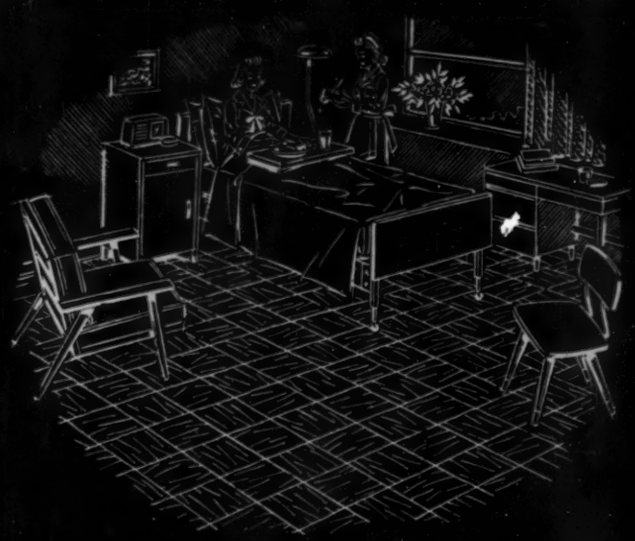
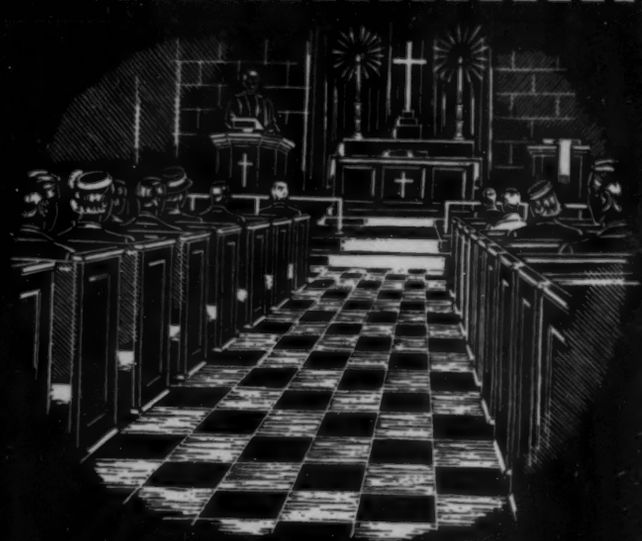
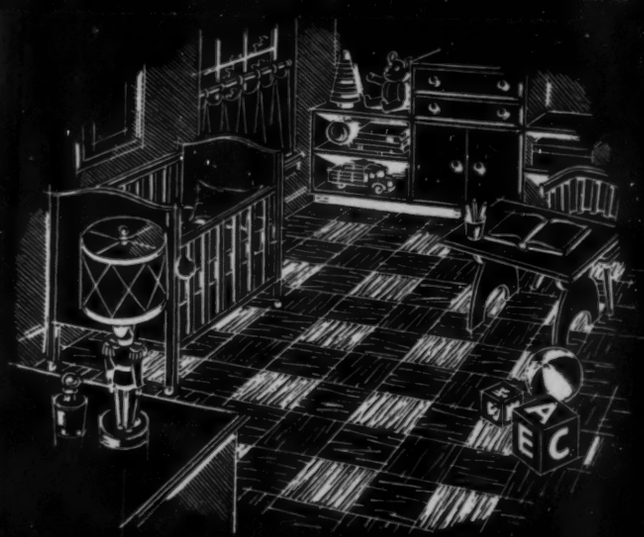
HAWS also features Electric Water Coolers, Deck-Type Fountains, HAWS Emergency Eye-Wash Fountains, and KRAMER Flush Valves for every make of plumbing fixture.



HOSPITALS



CHURCHES



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W R I G H T

Open beam ceiling, designed by Architect Reginald Roberts, San Antonio, Texas, was achieved by use of Insulite Roof Deck throughout home.

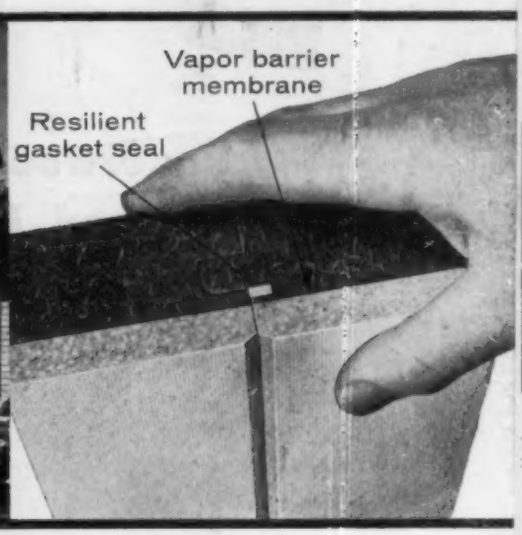
Texas Architect's home designed with Insulite Roof Deck

This is the home of Reginald Roberts, A.I.A., in San Antonio, Texas. Here you see the work of an architect free to do everything in the way that pleased him most. The home is notable for open-beam design throughout, accomplished economically by use of Insulite Roof Deck.

Roof-and-ceiling construction used 5,500 square feet of 3-inch Insulite Roof Deck. Under this handsome, low-pitched roof are a living room, dining room, kitchen, utility room, 3 bedrooms, 2 baths, den, workshop, maid's room and bath. The roof also covers a 3-car carport.

Luxurious homes are part of the diversified work of Reginald Roberts Associates. In recent years, a large number of homes designed by the firm have used Insulite Roof Deck—a 3-in-1 material that serves as decking, insulation and pre-finished ceiling. Made in 2′x8′ tongue and groove sections, it ordinarily saves about 12 man hours per 1,000 feet of surface as against 2″x6″ D&M sheathing.

Want technical data and literature? Write Insulite, Minneapolis 2, Minnesota.



Beautifully adapted to the San Antonio landscape, the home has generous expanses of exterior glass, with angles and overhangs that provide sunlight and shade as desired. Insulite Roof Deck helps keep all rooms delightfully cool.

For any type of job; any climate... Insulite Roof Deck is made 1½″, 2″ and 3″ thick, without vapor barrier; 2″ and 3″ thick with vapor barrier. No roof boards, insulation, lath or plaster needed. No painting, staining or other finish required on ceiling side.

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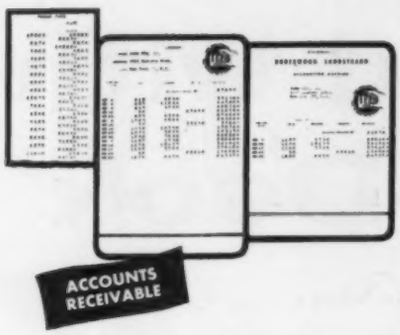

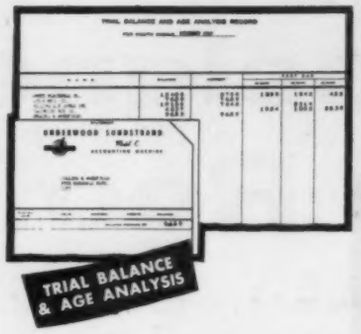

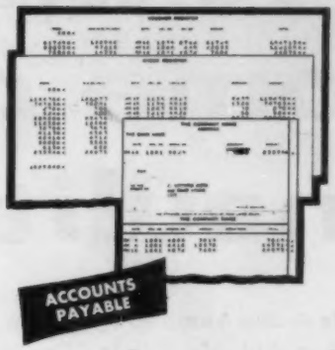

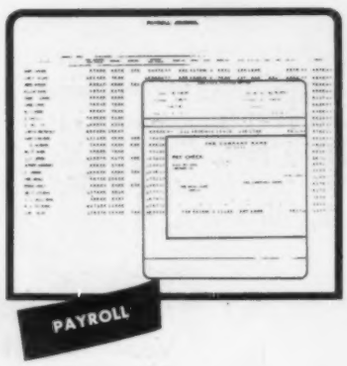

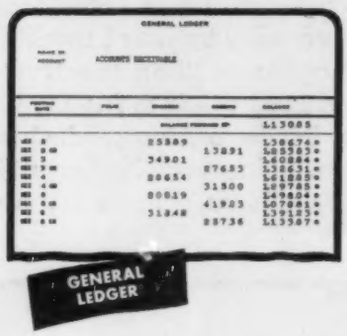

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THE RECORD REPORTS

WASHINGTON TOPICS

(Continued from page 286)

stitution Ave., NW, Washington 25, D. C., at a cost of $1.50 per copy.

CONGRESS VOTES FUNDS FOR CAPITOL FAÇADE EXTENSION

The appropriation of $12 million by the Congress for the Capitol Building's so-called East Front extension project kept that architectural controversy very much in the news last month. The sum represented the first construction funds voted for this contemplated major overhaul of the Capitol's east façade, $5 million in planning money having been voted last year.

No large-scale construction will start until after the Presidential Inaugural in January; and by that time the Commission for the Extension of the United States Capitol — the Vice President, the Speaker of the House, the minority leaders of House and Senate and the Architect of the Capitol, as set up by 1955 legislation — will have the report of the special "consulting and advisory group" of private architects it appointed in April to study the problem. The chief advisory group consists of Arthur Brown, Jr. of San Francisco, John F. Harbeson of Philadelphia and Henry Shepley of Boston.

Actually, the Capitol front extension is a relatively small part of the overall construction anticipated. But it is the portion that has drawn critical fire from many sources.

Estimated cost of the East front extension work has been placed at $42.6 million. The $12 million appropriated for fiscal 1957 is to start the project. Eventual cost of all Capitol Grounds improvements may run as high as $150 million.

PRIVATE GROUP WILL STUDY COLLEGE HOUSING OUTLOOK

The American Council on Education, using a grant of $10,000 from the Carnegie Corporation of New York, has begun a thorough study of college housing. This survey, it was said, will establish a factual basis for the determination of national policy.

Arthur S. Adams, Council president, said that in the absence of more substantial information, it has been necessary until now for policy-makers to base decisions affecting college housing primarily on inference and surmise. The research, conducted by Dean Arthur M. Wimer, School of Business, Indiana University, will seek facts concerning the past, present and future of housing for college students.

The area of need will be probed, with emphasis on financing. The survey, for example, will look into estimated funds required for additional student housing necessary by 1970. A report will be made on types and amounts of financial resources in prospect.

Results are scheduled for publication by the end of the year. The Council already has mailed out questionnaires to all accredited four-year colleges and universities after coordination with the U. S. Office of Education's current five-year inventory of all college facilities.

The Congress, meanwhile, had refused a requested $350,000 appropriation for the President's recently appointed Committee on Higher Education.

(More news on page 296)

DODGE Building Studies

DESIGN FOR MODERN MERCHANDISING: Stores, Shopping Centers, Showrooms

by the editors of ARCHITECTURAL RECORD

A detailed study of the physical design of selling establishments of all types. Included are stores for soft and hard goods, food stores, department stores, wholesale showrooms, and that offspring of a booming, suburban market, the shopping center. 254 pages, 8¾ x 11⅝, over 600 illustrations, $8.95.

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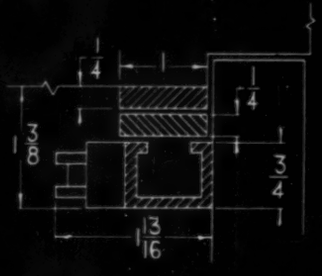

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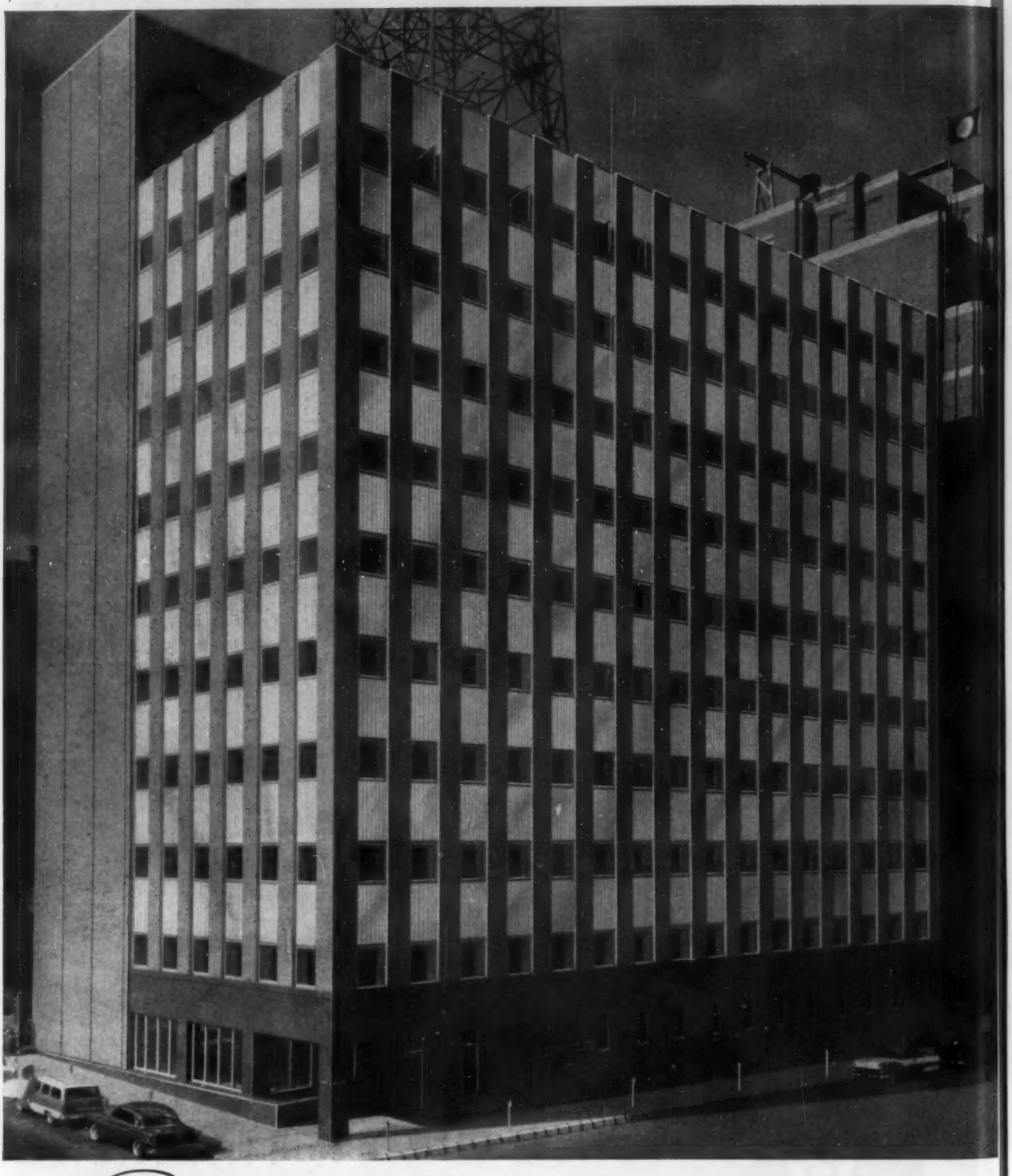
REYNOLDS ALUMINUM IN MODERN ARCHITECTURE



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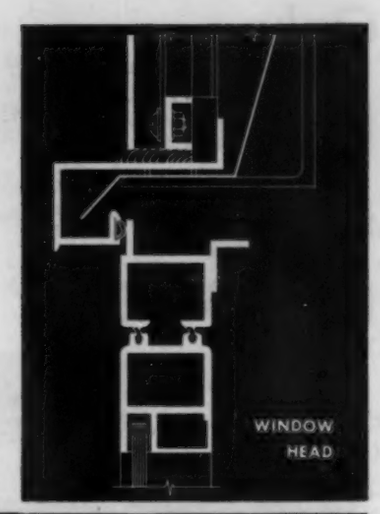
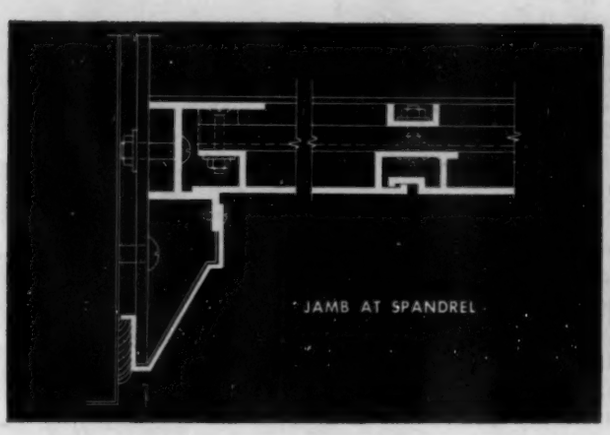
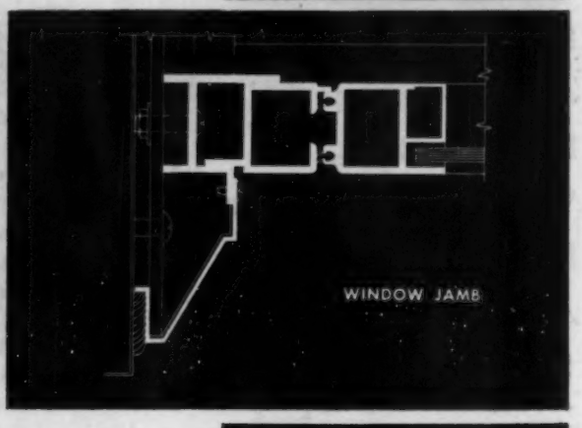
Des Moines

Erector:
David Architectural Iron Works,
Chicago

Architects:
Tinsley, Higgins, Lighter & Lyon,
Des Moines







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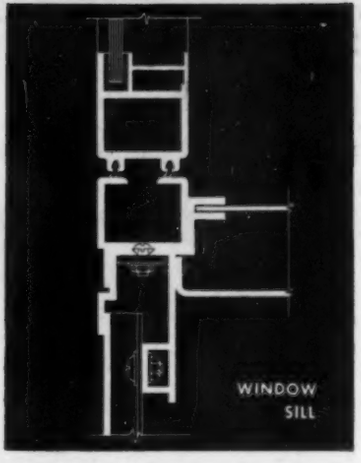

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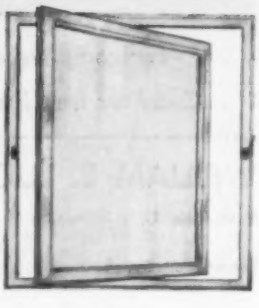

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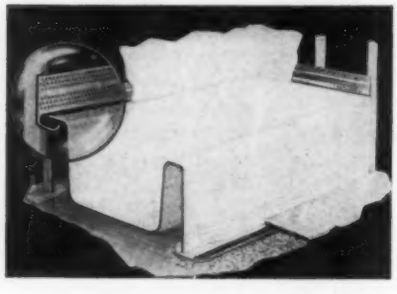

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THE RECORD REPORTS

(Continued from page 292)

ON THE CALENDAR

August

2–4 Midsummer Conference, Michigan Society of Architects — Grand Hotel, Mackinac Island, Mich.

13–31 The Artist, Materials and Technology, a special summer program sponsored by the Department of Architecture — Massachusetts Institute of Technology, Cambridge 39, Mass.

25ff Seventh annual National Furniture and Home Furnishings Show; until Sept. 11 — Coliseum, New York City

27–31 The 86th annual Congress of Correction, American Corrections Association — Hotel Statler, Los Angeles

September

10–12 Fall Meeting, American Society of Mechanical Engineers — Denver

13–15 Central States Regional Conference, American Institute of Architects — Omaha

15–23 National Home Week, sponsored by the National Association of Home Builders

17–20 Annual convention, American Hospital Association — Palmer House, Chicago

17–21 National Technical Conference, Illuminating Engineering Society — Hotel Statler, Boston

The 11th Annual Instrument-Automation Conference and Exhibit, sponsored by the Instrument Society of America — Coliseum, Columbia University and Hotels Statler and New Yorker, New York City

19–20 Modern Masonry, a conference to be conducted by the Building Research Institute under the chairmanship of C. E. Silling, A.I.A. — U. S. Chamber of Commerce Bldg., Washington, D. C.

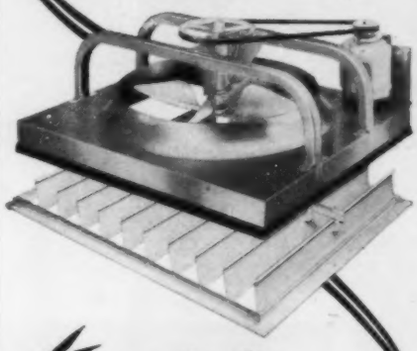
19–21 The 25th Annual Meeting, Porcelain Enamel Institute, Inc. — The Broadmoor, Colorado Springs

24–28 Annual meeting, Atomic Industrial Forum and Trade Fair of the Atomic Industry — Navy Pier, Chicago

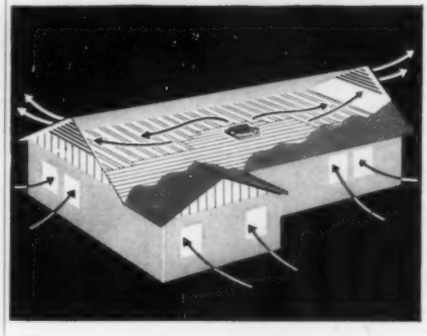
28–29 Annual General Conference,

(Continued on page 300)

Hunter Package Attic Fan



cools the entire house at low cost



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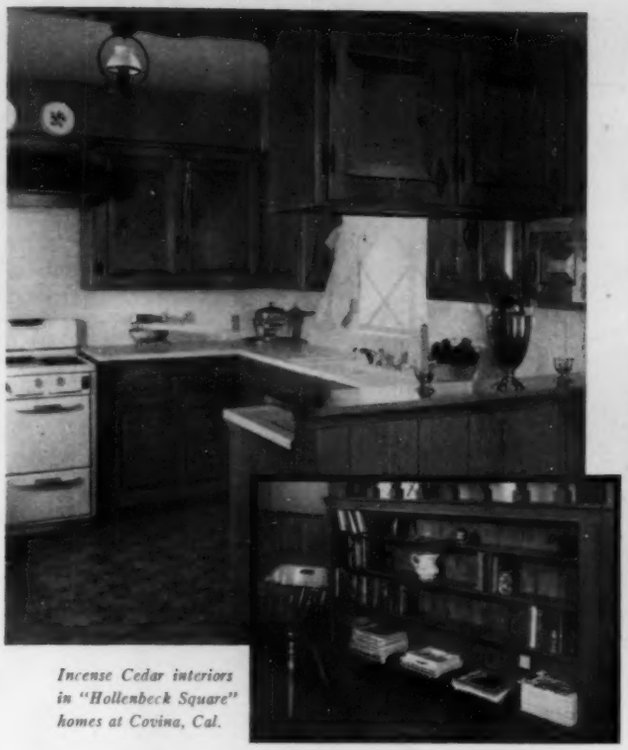

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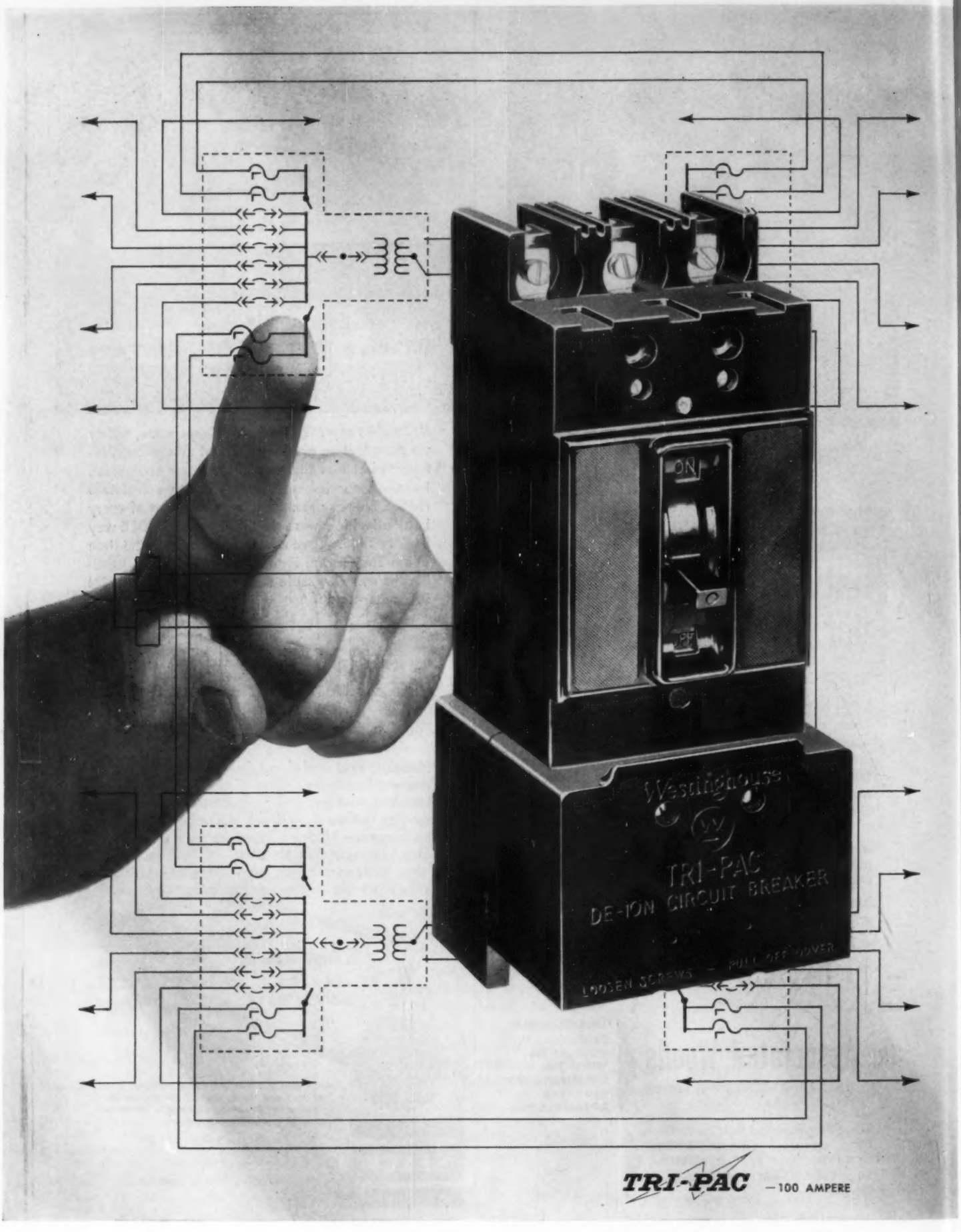
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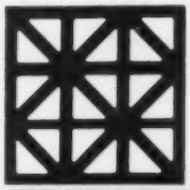

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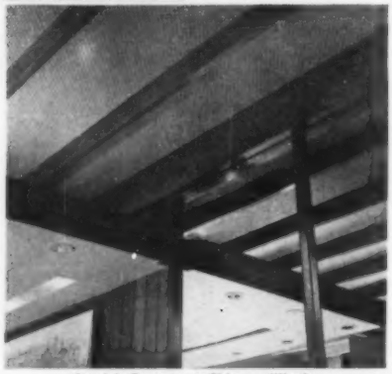

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THE RECORD REPORTS

(Continued from page 296)

American Interprofessional Institute — Lincoln, Neb.

28–29 North Central States Regional Convention, American Institute of Architects — Pfister Hotel, Milwaukee

28ff International Recreation Congress, National Recreation Association; until Oct. 1 — Philadelphia

October

1–3 National Electronics Conference — Hotel Sherman, Chicago

1–5 Fall General Meeting, American Institute of Electrical Engineers — Morrison Hotel, Chicago

2–5 Annual meeting, National Council on Schoolhouse Construction — Washington, D. C.

6–9 Convocation of scientists, engineers and educators to discuss how education can help to overcome engineer shortage — The Cooper Union for the Advancement of Science and Art, New York City

7–9 Seventh annual Gulf States Regional Conference, American Institute of Architects — Chattanooga, Tenn.

8–11 Eighth Mental Hospital Institute, sponsored by the American Psychiatric Association — Shirley Savoy Hotel, Denver.

9–12 Annual Conference, United States Civil Defense Council — Biltmore Hotel, Atlanta

10–12 The 23rd Annual Convention, Architects Society of Ohio — Hotel Commodore Perry, Toledo, Ohio

10–14 California-Nevada-Hawaii Regional Conference, American Institute of Architects, and meeting of California Council of Architects — Yosemite Lodge, Yosemite, Cal.

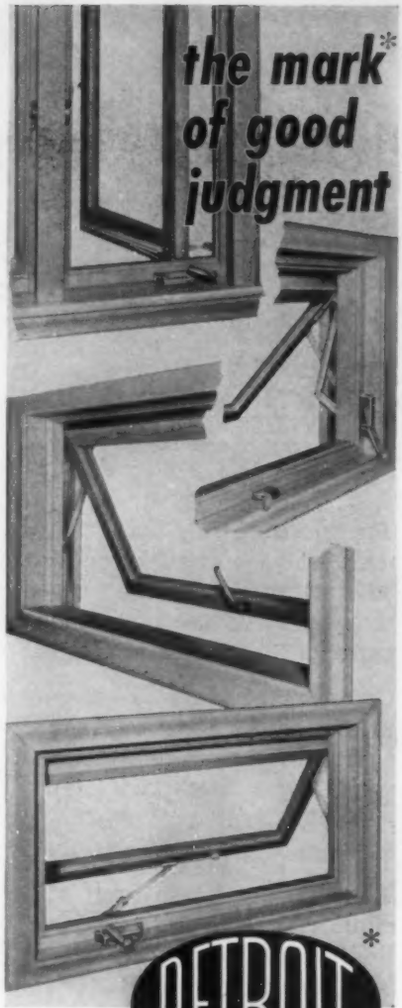
15–19 Pittsburgh convention, American Society of Civil Engineers — William Penn Hotel, Pittsburgh

18–20 Western Mountain Regional Conference, American Institute of Architects — Salt Lake City

22–24 Annual convention, National Association of Housing and Redevelopment Officials — Hotel Statler, New York City

24–26 New York District Regional Conference, American Institute of

(Continued on page 304)



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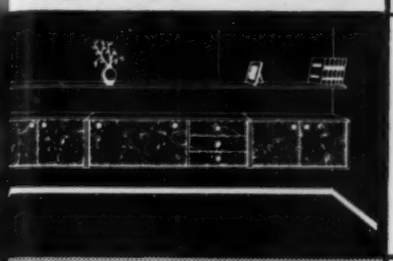

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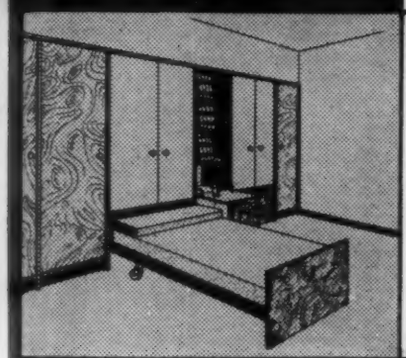
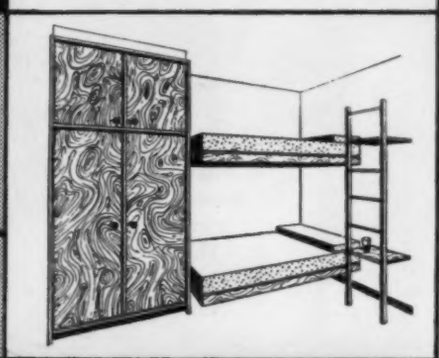
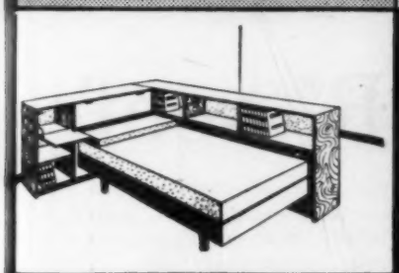
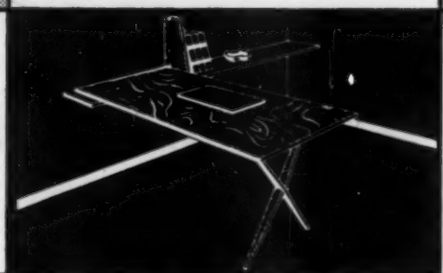
Mario Dal Fabbro, famous furniture designer and author, has produced the most complete book of its type ever published. With its superb designs and meticulous attention to details, this book is a must for the working library of any architect, home builder, interior designer or furniture designer.









THREE REASONS WHY YOU NEED THIS BOOK

1 **Complete plans and instructions for constructing 102 contemporary built-ins from common grades of lumber.**

2 **Special data for adapting these projects for any room or usable space.**

3 **Comprehensive details and vital information for designing your own special built-in projects.**

Guaranteed to be worth its price in ten days. Fill in and mail the coupon today. Use *How to Make Built-in Furniture* for 10 days on any built-in project. If this book does not give you more than its price in valuable ideas and help, then disregard our invoice and send the book back without obligation.

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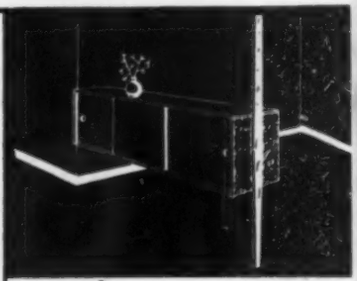
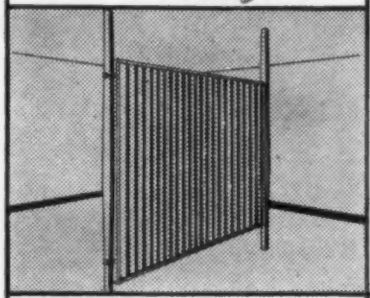
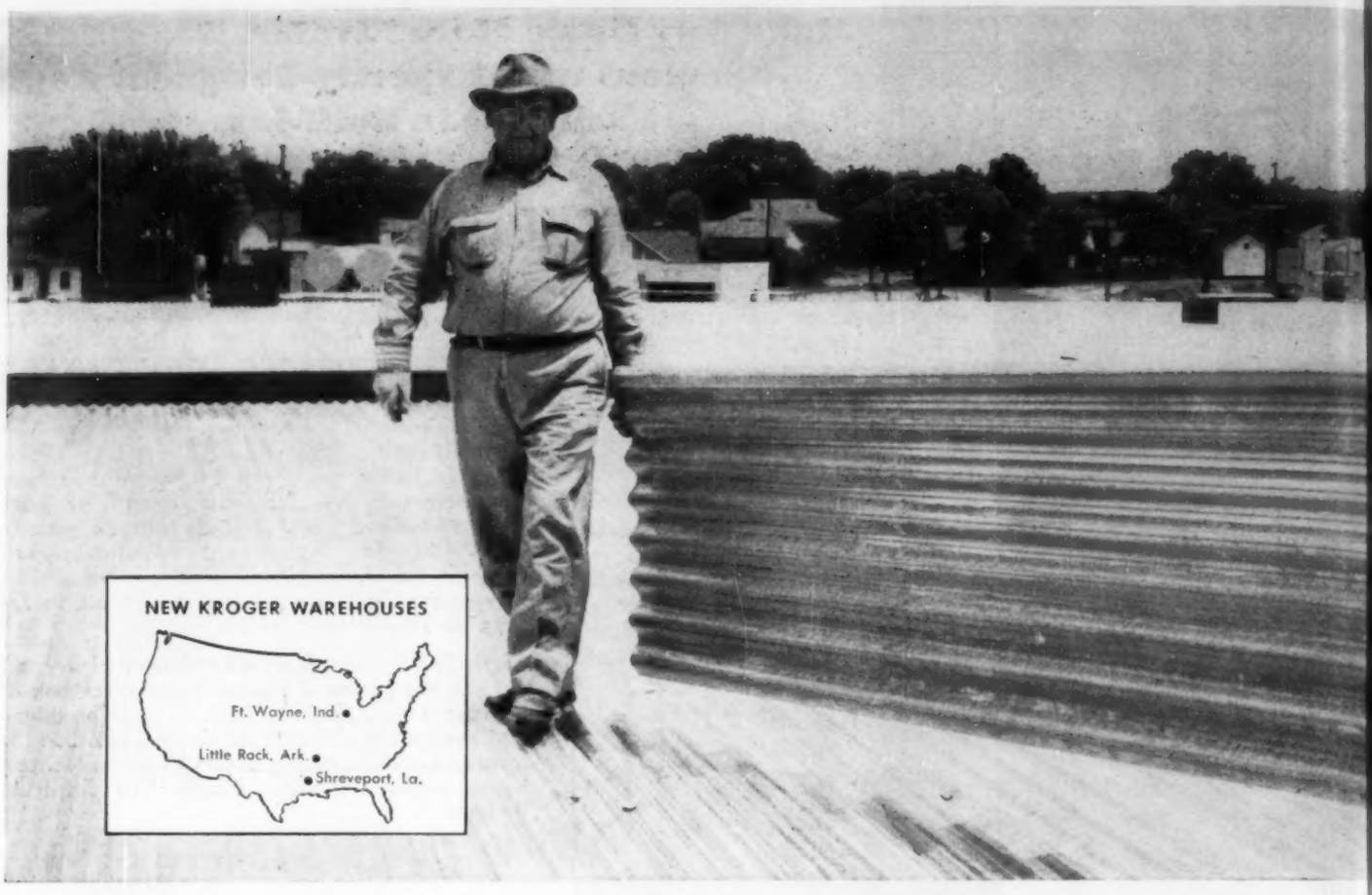






15 Acres of TUFCOR® roof

Old buildings, rising volume and congested sales areas can hog-tie a firm's customer service—but it won't happen at Kroger! Spearheading the company's vast expansion program are 3 new warehouses in Little Rock, Ark., Shreveport, La.,* and Ft. Wayne, Ind., 660,000 sq. ft. of new buildings—all covered with tough-temper Tufcor steel deck and lightweight, insulating concrete fill. Why Tufcor? Because Tufcor gives insulating concrete a strong, *permanent* base . . . weighs up to 7 lbs. per sq. ft. less than other decking

Read what Kroger's building team says about superior TUFCOR performance

ENGINEER LEWIS W. HIXSON of Hixson, Tarter & Associates, Cincinnati (designers of Kroger warehouses) says, "Low cost per square foot and dead weight savings definitely affected the selection of Tufcor over other poured-in-place decks. Because much of the Kroger buildings will be refrigerated, the high insulation value of a Tufcor-Insulating Concrete roof system also offered a big advantage, helped save $5,000 on the Little Rock job, alone!"

CONTRACTOR WERNER KNOOP of the Baldwin Co. (general contractors for the Kroger warehouse in Little Rock) says, "We're very pleased that the Kroger Company decided to use Tufcor steel decking. It has such surprising strength in comparison with most decking. It arrived on time, was cut the way we wanted it and helped us to stay on schedule. I'm very much impressed with the speed of Tufcor placing!"

ON-THE-JOB SUPERVISOR THOMAS MULROY says, "Tufcor sheets really go down fast. With two crews, we placed about 15,000 square feet of decking a day. The men are more at ease walking around on Tufcor, too. Those sheets give stronger support to workers, concrete buggies and stacked building materials than some other types of decking. There's no danger of falling through to the ground below—and the men know it!"

IN LITTLE ROCK, workmen placed *and welded* 8200 sq. ft. of Tufcor in 3 hours . . . or 45 sq. ft. per minute! Each sheet covers about 32 sq. ft., fits snugly in place to provide an immediate, safe working platform.

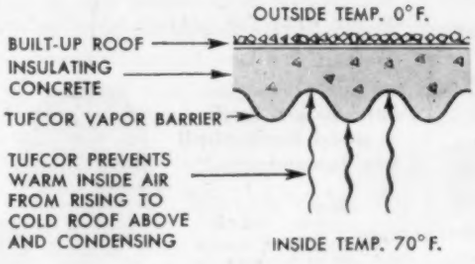
PLACEMENT of lightweight insulating concrete on Tufcor steel decking is a fast operation. The result is a rigid, *permanent* slab with low dead load, high insulating value and unsurpassed strength.

tops new Kroger® warehouses

. . . is easy to place, saves on framework and fill, guards against fire. In fact, many insurors and codes insist on sprinklers every 120 sq. ft. when ordinary decking is used—but only every 130 sq. ft. with fire-resistant Tufcor! By saving on sprinklers and insulation, Tufcor cut $6,275 off the Little Rock bid price . . . $12,500 in Shreveport! Like to save thousands of dollars on your next job? For more information, estimates or costs on your building plan, consult Granco home or district office, Attention: Dept. R-64.

**For Child's Food Stores, Inc., a Kroger associated company*

A POSITIVE VAPOR BARRIER, TOO!


OUTSIDE TEMP. 0° F.
BUILT-UP ROOF
INSULATING CONCRETE
TUFCOR VAPOR BARRIER
TUFCOR PREVENTS WARM INSIDE AIR FROM RISING TO COLD ROOF ABOVE AND CONDENSING
INSIDE TEMP. 70° F.

While water vapor penetrates porous roof decks, it does *not* penetrate Tufcor steel decking. Authoritative lab tests show Tufcor *stays* at room temperature, stays *dry*, acts as an effective vapor barrier to prevent moisture from condensing on the cold underside of the built-up roof. This vapor barrier maintains insulating properties, actually saves *thousands* of dollars a year in fuel!

See our listing in Sweet's Architectural File and Industrial Construction File

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A Subsidiary of GRANITE CITY STEEL COMPANY

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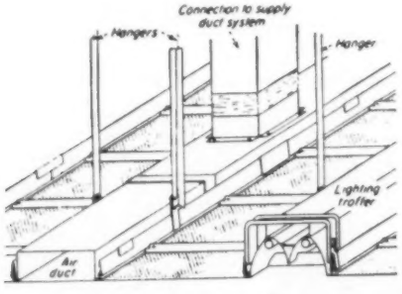
- Eliminates danger of "rain".
- Effective noise reduction.
- Immediate action — no uncomfortable time lag on either heating or cooling cycle.

All for little more than the cost of a quality suspended ceiling alone.



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THE RECORD REPORTS

(Continued from page 300)

Architects — Lake Placid Club, Lake Placid, N. Y.

25–17 Annual convention, New York State Association of Architects — Lake Placid Club, Lake Placid, N. Y.

29–31 National Planning Conference, Community Planning Association of Canada — Chateau Laurier, Ottawa

31ff Texas Regional Conference, American Institute of Architects; until Nov. 2 — Corpus Christi, Tex.

OFFICE NOTES

Offices Opened

• Seymour Herbst, Architect, has announced the opening of his office at 601 E. Tremont St., New York 57, N. Y.

• Stanley Ring, Architect, has established offices at The Palm Desert Patio, 73–766 Highway 111, Palm Desert, Cal.

• Albert F. Stine, Consulting Engineer, has opened offices at 444 Broadway, Saratoga Springs, N. Y.

Firm Changes

• Georgius Cannon, William Rowe Smith, Dean Gustavson, Architects, have announced the merging of their offices in a new firm, which will have Fred W. Needham and John W. Sugden as Associates. Offices are at 1555 East 3900 South, Salt Lake City, Utah.

• Hunter, Caldwell & Campbell, Architects, have admitted John Rea to partnership in the firm, which is located at 3601 Fifth Ave., Altoona, Pa.

• John C. Knight, A.I.A., has joined the Los Angeles firm of Welton Becket and Associates. Mr. Knight was formerly associated with Wm. Henley Deitrick in the firm Deitrick-Knight and Associates, in Raleigh, N. C.; Mr. Deitrick remains as principal in the Raleigh firm of Wm. Henley Deitrick and Associates, Architects.

• Carl J. Malmfeldt and Associates, under Carl F. Hakewessell and Robert H. Lienhard, have announced that they have admitted Ben H. Kenyon Jr., Malcolm N. Crabtree, A.I.A., and Donald K. Dohm to partnership, and at the same time have changed the firm's name to The Malmfeldt Associates, Architects.

• Henry Vannier Shriver and Ayler Job Holland, Jr., have formed a partnership

(Continued on page 308)

Planning Wood Floors for a School?

Mr. Spec Writer

SEAL-O-SAN® finishes offer these 3 advantages

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2. ***A beautiful, natural wood finish***
3. ***Easy, low cost maintenance***

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"Speed and sure footing which are so necessary in basketball are insured by Seal-O-San Finish. There is no substitute for Seal-O-San in surfacing your basketball floors."

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In any type of door or window, you can be sure of *positive sealing* and *friction-free action*. You can be sure of this performance for a long time. Just specify a product sealed with Schlegel Woven Pile. We'll be glad to send you names of window manufacturers using Schlegel Woven Pile.

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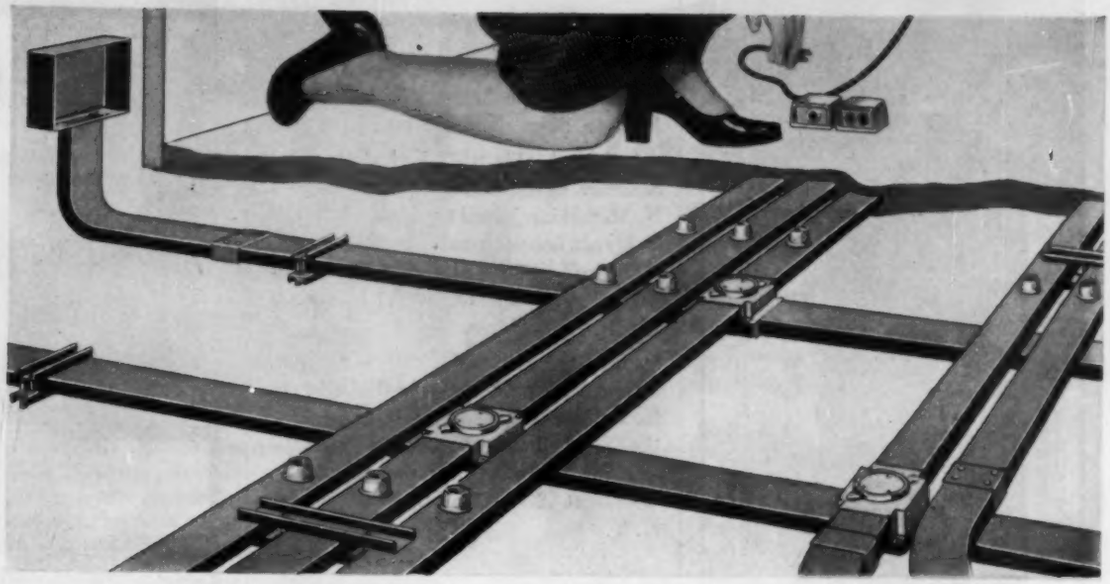
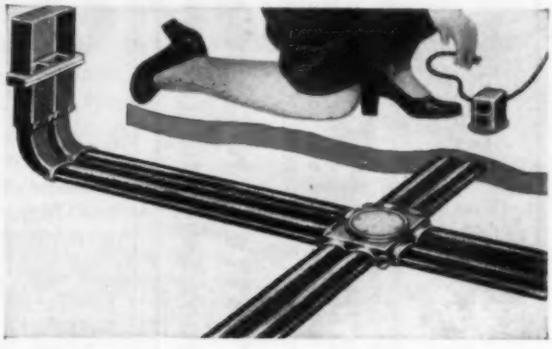
Determine which of the three systems shown at the right is best suited to solve your power distribution problems now and in the future. For complete details, get in touch with your nearest General Electric Construction Materials district office or write Section C67-85, Construction Materials Divi-Division, General Electric Co., Bridgeport 2, Conn.

General Electric underfloor wiring—3 SYSTEMS



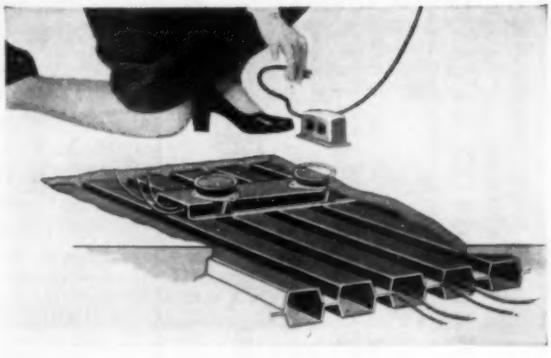
1. for two-level distribution—General Electric's New Steel System

This new all-steel system provides complete flexibility in layout and design because there are no limitations to the duct pattern in either the feeding or distribution portion of this two-level system. Use as many ducts as you like. Separation of services allows unobstructed runs with no crossovers or crossunders. Wire pulling is easier and circuits are easy to trace. New steel duct (4-square inch cross-sectional area) provides for increased wiring capacity.



2. for single-level distribution—General Electric Fiberduct

Here's a widely accepted underfloor electrical raceway system that provides a good distribution of electrical outlets for many office operations. Yet the cost is low because Fiberduct is made of a strong, yet inexpensive, fibrous compound that can be sawed and fitted easily.

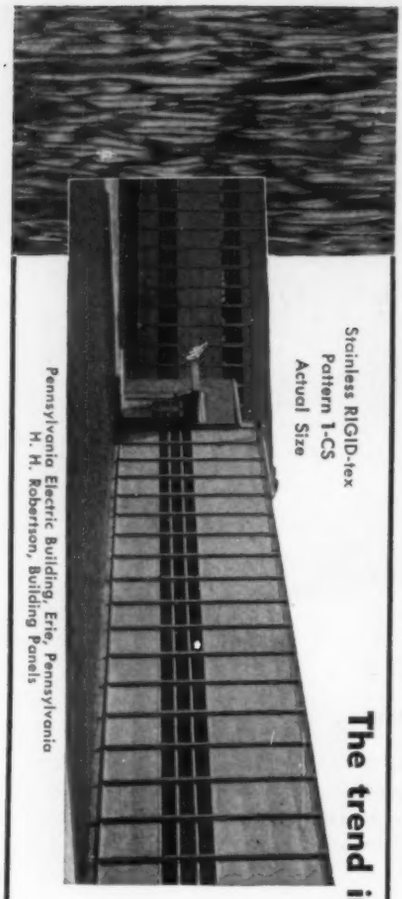


3. for cellular construction—General Electric Q-Floor wiring

Q-Floor wiring is designed for installation in cellular steel subflooring. It makes it possible to convert every cell into a raceway . . . makes every square foot of floor available for present and future electrical use. No costly alterations, no litter, no tie-up of space or lengthy interruption of office routine, no matter how much or how often your electrical requirements change.

Progress Is Our Most Important Product

GENERAL ELECTRIC



Stainless RIGID-tex Pattern 1-CS Actual Size

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THE RECORD REPORTS

(Continued from page 304)

to be known as Shriver and Holland, Architects. The firm is located at 523 Flatiron Bldg., Norfolk, Va.

• Arthur A. Shurcliff and Sidney N. Shurcliff have announced that Vincent N. Merrill has joined the firm, which will be known hereafter as Shurcliff, Shurcliff & Merrill, Landscape Architects and Town Planners. Offices are at 14 Beacon St., Boston 8, Mass.

• Tippetts-Abbett-McCarthy-Stratton, Engineers, have announced that Edward K. Bryant has been made a partner of the firm; he has been associated with the firm for a number of years. Offices are located at 62 W. 47th St., New York 36, N. Y.

New Addresses

Welton Becket and Associates, Architects-Engineers (San Francisco Office), 153 Maiden Lane, San Francisco, Cal.

Bellman Gillett & Richards, Architects & Engineers, 1600 Madison Avenue, Toledo 2, Ohio.

Romolo Bottelli Jr., A.I.A., 1878 Springfield Ave., Maplewood, N. J.

Joseph E. Fronczak, Architect, 150 North St., Buffalo 1, N. Y.

Ginocchio-Cromwell and Associates, Architects, 416 Center St., Little Rock, Ark.

Albert S. Hartheimer, Architect, 895 Myrtle Ave., Albany 8, N. Y.

Lindsay & Maples, Architects, Cloverleaf Bldg., Clark and Hannah Sts., Knoxville, Tenn.

Maguolo and Quick, Architect-Engineer, L. P. Cotter, A.I.A., 3329 Glenmore Ave., Cincinnati 11, Ohio

Moran, Proctor, Mueser & Rutledge, Consulting Engineers, 415 Madison Ave., New York 17, N. Y.

Nolen & Swinburne, Architects, 1649 N. Broad St., Philadelphia 2, Pa.

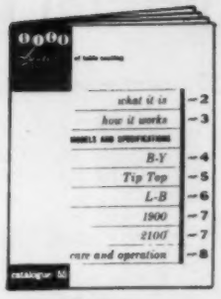
R. R. Popham, Engineer; Laramore, Douglass & Popham, Inc., Engineers-Constructors, 2 Park Ave., New York 16, N. Y.

Van & Vierse, Consulting Engineers, 16 N. Central, Clayton 5, Mo.

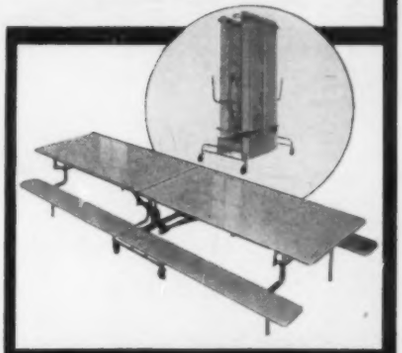
E. Davis Wilcox, Architects-Engineers, P. O. Box 81, Tyler, Tex.

CORRECTION

The slab-glass stained glass window erroneously credited to designer Peter Recker by the RECORD on page 16B of its June issue should have been credited to Bernard O. Gruenke.



FREE *catalog describes the* **SICO** *System for lower costs, multi-use of space and convenience*



SICO B-Y Table

typical of the quick folding, easy rolling units that instrument the SICO System of school, industrial and institutional seating. Cost less because they require no installation and seat greater numbers in less space. SICO Tables make multi-use of space practical and economical without any built-in construction. They permit any area to be converted from one function to another in a matter of minutes. Fast, safe operation because there are no latches, locks or catches. All units require small storage area—B-Y needs just 8¾ Sq. Ft. All have tough, sanitary, mellamine plastic tops mounted on 14 gauge, structural steel frames that are zinc lustron plated for lasting protection. All are equipped with 4 in. rubber casters. B-Y seats 16 adults or 20 children.

FREE CATALOG—fully describes the SICO System for greater economy and presents complete table specifications. (Listed Sweets: 22i/SE).

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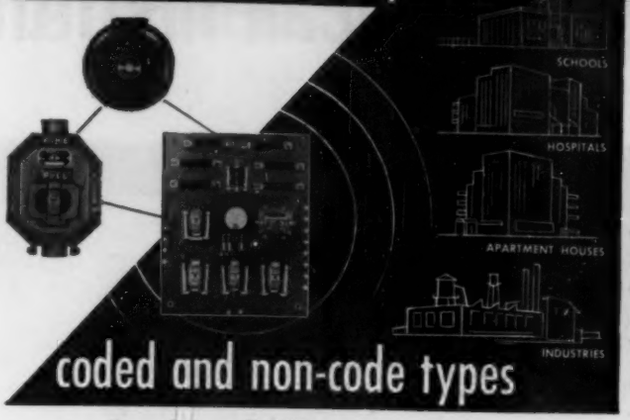
Interior Fire Alarm Systems



coded and non-code types

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Both coded and non-code types are available in various arrangements depending on type of building or establishment. Although Interior Fire Alarm Systems are intended primarily for warning occupants of a building, they can be connected into a municipal system.

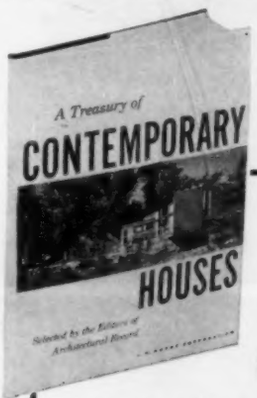
Engineering representatives in principal cities are available to assist in specifications.

Write for Bulletin FA-7

Signal Engineering & Mfg. Co. has changed its name to

Wheelock SIGNALS INC.

FIRE ALARM W S LONG BRANCH, N. J.



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Building Engineer

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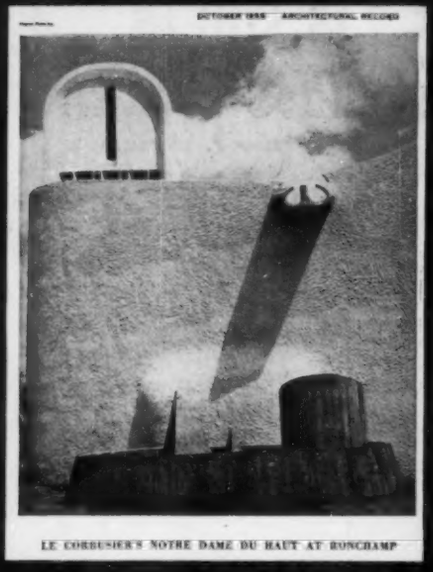
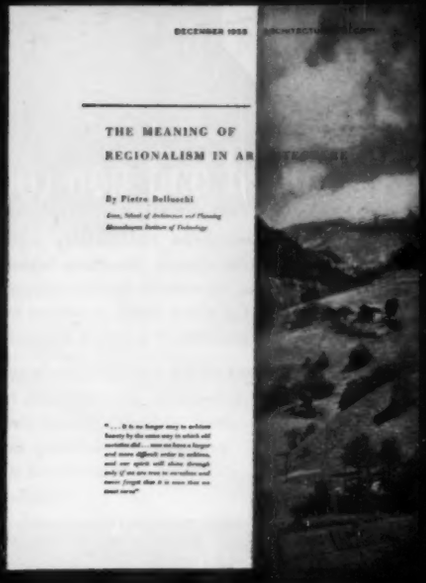
City.....Zone.....State.....

again top awards go to American Institute



LE CORBUSIER'S NOTRE DAME DU HAUT AT RONCHAMP

FIRST
AWARD 1956
"Best photograph of an architectural subject published in a magazine."



FIRST
AWARD 1956
"Best article in a professional architectural magazine."

The American Institute of Architects
Architectural Journalism Awards 1955
First Award Class 6
Photographer Rene Burri
Published by Architectural Record

The American Institute of Architects
Architectural Journalism Awards 1955
First Award Class 3
Author Pietro Belluschi
Published by Architectural Record

The American Institute of Architects has presented to Architectural Record *both* First Awards for which architectural magazines were eligible in its Third Annual Architectural Journalism Competition.

Architectural Record has now won five out of six possible top awards in editorial competitions sponsored by the A.I.A.—the professional organization preeminently representing the audience for which all architectural magazines are edited.

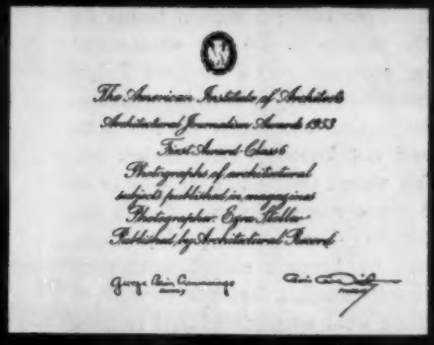
The significance of these awards—made by architects judging the merits of architectural journalism—will not escape building product advertisers who seek to rate architectural magazines on the basis of readership.

ARCHITECTURAL RECORD in of Architects' Journalism competition

5 out of 6 Awards by the American Institute of Architects bespeak the editorial values of Architectural Record

The American Institute of Architects
Architectural Journalism Award 1954
First Award Class 3
Author: Lewis Mumford
Published by Architectural Record

FIRST AWARD 1955
"Best article in a professional architectural magazine."


The American Institute of Architects
Architectural Journalism Award 1953
First Award Class 6
Photographs of architectural subjects published in magazines
Photographer: Ezra Stoller
Published by Architectural Record

FIRST AWARD 1954
"Best photograph of an architectural subject published in a magazine."

The American Institute of Architects
Architectural Journalism Award 1953
First Award Class 3
Articles in professional architectural magazines
Author: Pietro Belluschi
Published by Architectural Record

FIRST AWARD 1954
"Best article in a professional architectural magazine."

Additional *editorial reasons* why year after year (and again in 1956) more building product manufacturers and their advertising agencies are placing more pages of advertising in *Architectural Record* than in any other architectural magazine:

1. A total of 36 awards for editorial excellence—a record for architectural magazines.
2. Editorial content *timed* and *balanced* with the aid of *Dodge Reports* of building planning activity to be of top value to architects and engineers in terms of the work on their boards.
3. Most editorial pages in the field—with every page edited *specifically* for architects and engineers.
4. Steady preference of architects and engineers for Architectural Record as shown by 84 out of 91 readership studies *sponsored by building product manufacturers and advertising agencies.*

Again in 1956, your architectural advertising is most productive when addressed directly to architects and engineers in the one magazine edited specifically for architects and engineers—*Architectural Record.*

Architectural Record

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Alexandria, Va. • Dallas, Tex. • Decatur, Ga. • Xenia, O.

THE RECORD REPORTS

(Continued from page 9)

and said, "I am looking for someone who can draw my buildings".

This was in the midst of the Depression, and eyeing the folding money, I said, "You have come to exactly the right place". He then explained that he, or some mysterious Syndicate behind him, had an option on 12 city blocks in a mid-western city; that they proposed building all 12 blocks solidly up to 30 stories; that at the top connecting all the roofs, there had to be a racetrack for greyhounds; and how much would such a picture cost? With my heart in my mouth I said $8.00 per floor per building with a bonus for the racetrack. To my amazement he accepted and I realized I had made one of the two classic mistakes: estimating too much or too little and not knowing what makes you feel worse. Over the next year or so I made many pictures of this unusual project, and he paid the bills, thereby keeping me alive through the Depression, but one day something went wrong; he failed to meet the bills for his six-room hotel suite; the hotel, under the illusion that the Renderings had a market value, carted them down to the basement for "security"; and for all I know those extravagant pictures are still over in the cellars of the Barclay.

I have been forced to the conclusion that most of the promoters who have called at my studio are nuts. Another example was the engineer, preoccupied with function, with his plan for housing the U.N. on a mile-square concrete platform miles out in the Atlantic. It had one advantage; you wouldn't have to see it. And I'm glad that no one except the engineer ever saw my picture of it.

Even Architects sometimes provide diverting incidents, especially when they are genius-Architects temporarily yoked together on some Board of Design. For example, the real U.N., when all those Design-Consultants were here from abroad. One morning, in my room adjoining their large Conference room I found a note from the most assertive foreigner saying (as nearly as I can read French) "Make perspective study of enclosed sketch-plan and hand it to me privately this afternoon." As I was under the impression that the

(Continued on page 316)

Why do so many architects specify SUMO SUBMERSIBLES for deep well water supply?

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NEO-RAY LIGHTING FIXTURES
Simple Installation . . . Easy Maintenance . . .
plus EXTRAS!!!

LOUVRED CEILINGS PATENTED
Specify ML for removable sections, continuous unbroken pattern between parallel runners (tracks).
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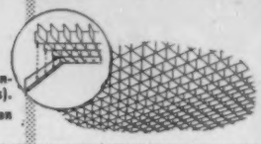
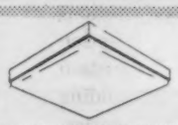


LUMINETTE PLEXIGLAS BOTTOM PAT. PEND.
Recessed and surface mounted fixtures—24", 48", 96", also 2' sq., 2'x4' and 4' sq.—featuring the famous Neo-Rex plexiglass shield that will not discolor.



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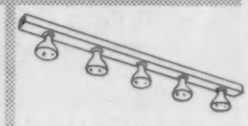

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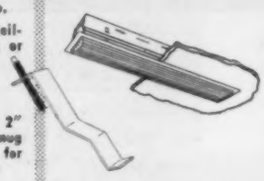

See our catalog in
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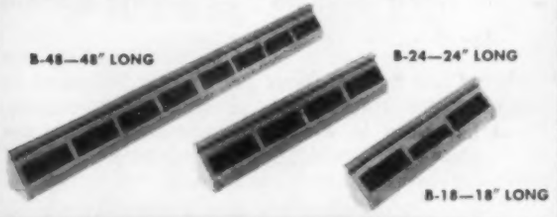

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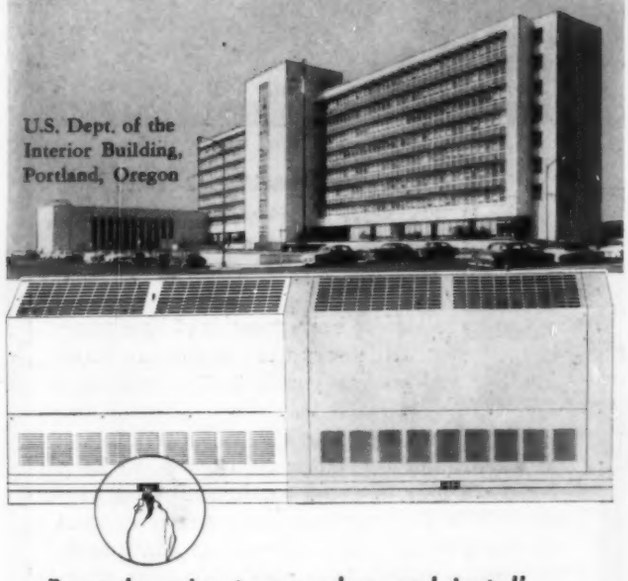

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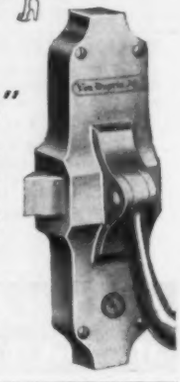

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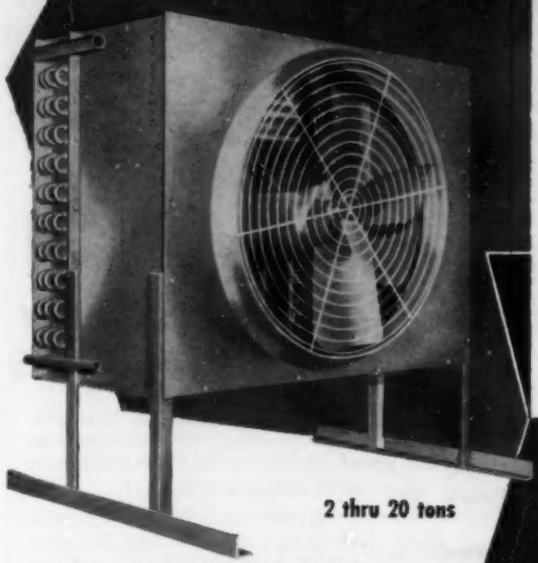

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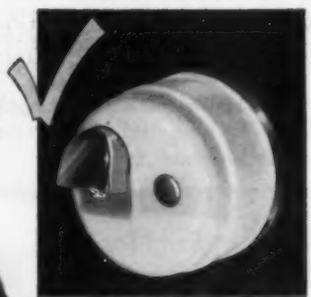

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THE RECORD REPORTS

(Continued from page 312)

perspective studies were to help liaison between ideas of *all* the Consultants, I saw no reason for the private transaction; nor did I relish the note's peremptory tone. However, you had to handle the prima donnas with kid gloves, so I was taken ill and spent the day with my wife in the zoo which is in Central Park. And wasn't surprised to learn, later, that the presumably collaborating Consultant was interested in privately promoting his own pet parti. Nor was this the first or last time that I've noticed an Architect who was not Chairman of a Board of Design acting as though he dearly wanted to be Chairman.

I will close with three propositions:

(1) The dawn of a Modern Architecture implies the dawn of a Modern Architectural Rendering. However, as the term "Modern Architecture" turns out to include such a variety of trends — everything from Wright to Mies and points left and right — we will probably continue to get a variety of trends in Rendering. For example, a gifted Design Board in Miami has under way a project likely to include modern designs by Architects of most of the countries in the Western Hemisphere; so we hope to set up a varied Rendering staff, including Renderers who perceive, in architecture, poetry as well as prose, and including at least one, I hope, who, in pure water-color, can handle subtropical architecture as freely as Winslow Homer handled those palm trees over in Nassau.

(2) The Rendering of a building should be made by the Architect who originally conceived and designed the building; and all Architects should be required, before Registration, to demonstrate their ability — using an ordinary piece of paper and an ordinary pencil plus maybe three colored crayons — to draw, in five or ten minutes and in the presence of a client, a thumbnail Rendering so true in proportions, so convincing throughout, as to arouse in the client (and in the Registration Board) feelings of both enthusiasm and confidence.

(3) The aim of Rendering is to help get projects designed; to help get design understood by all concerned; and thereby to help get buildings built.

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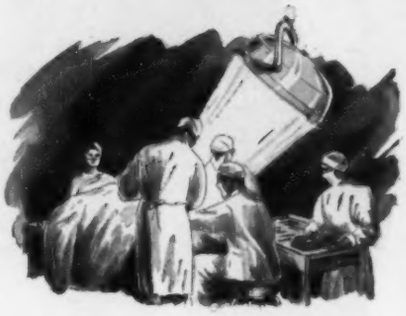

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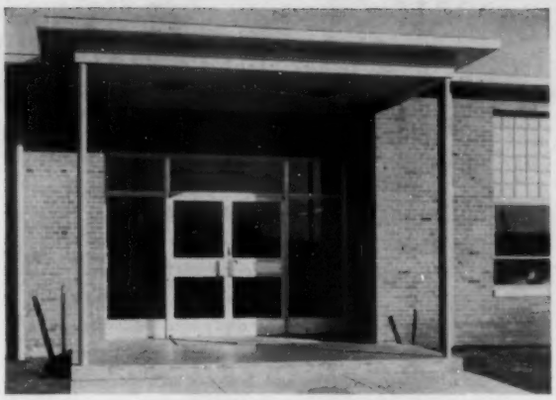

Northedge Elementary School, Plainedge, L. I., Architects: Jagow & Heidelberger, Hempstead, L. I. Entrance installed by Store-Craft, Inc., Corona, L. I. Main entrance consists of Alumiline Entrance Unit with Alumiline Center Panel Doors. Note center panel which gives added strength to the door at the point of considerable use, and also serves to hide the inside crash bar of the concealed panic device from outside view.

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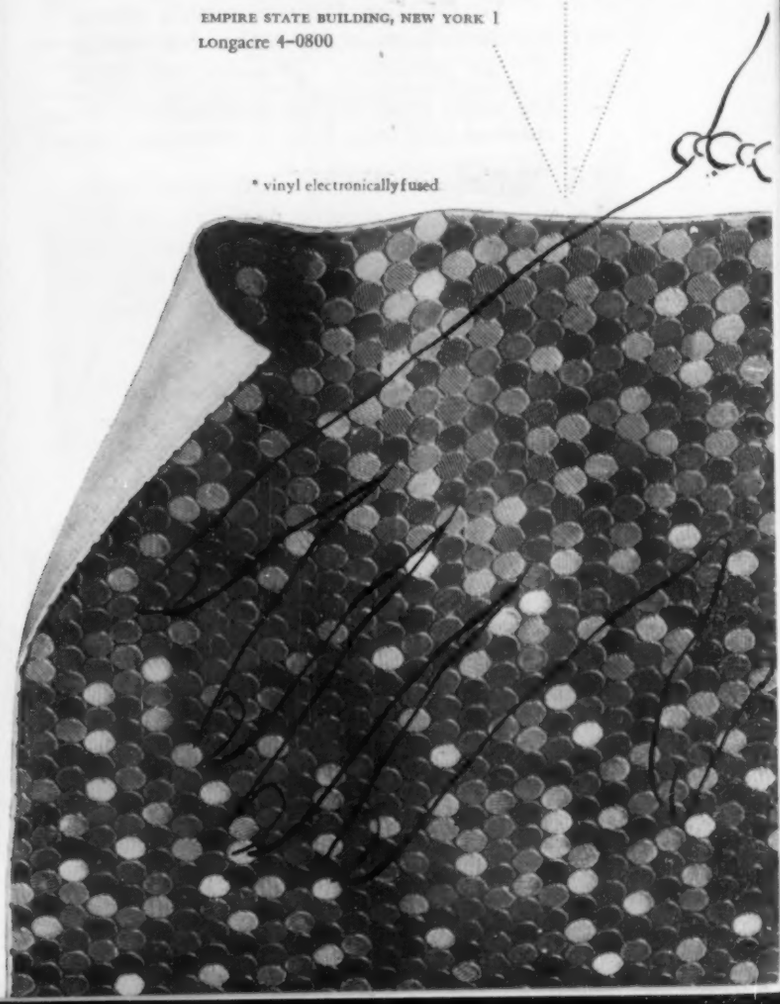

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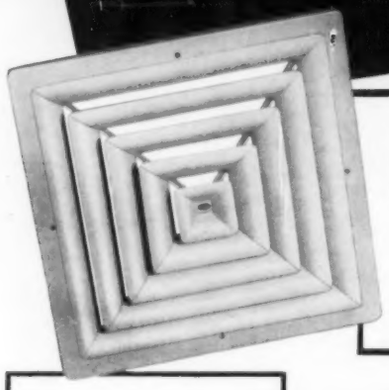

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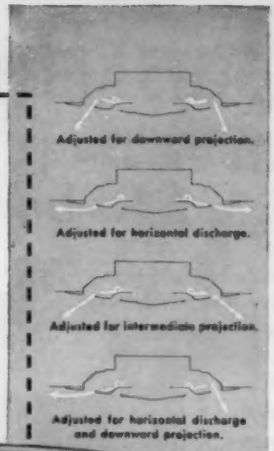
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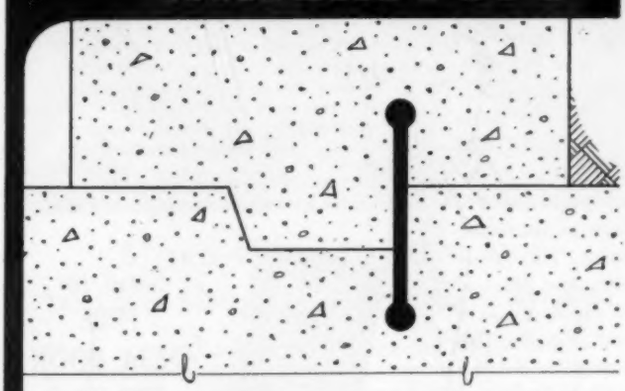

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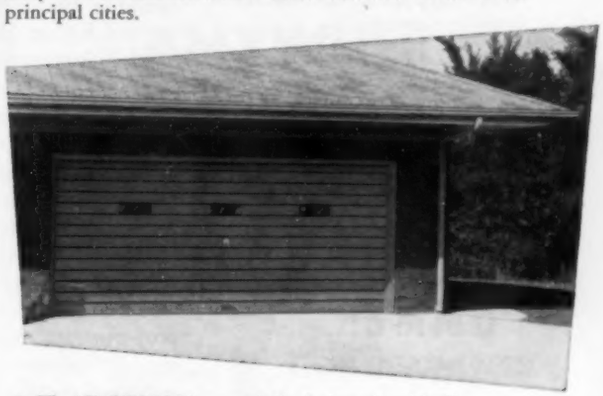

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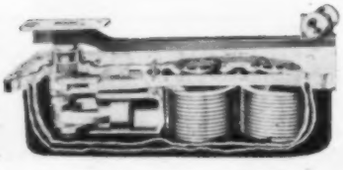

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REQUIRED READING

(Continued from page 56)

RECORD HOUSES

able from engineering and might seem to some architects to be too "inhuman" for use in a house. The series of photographs of a very human family actually living in the house goes far toward dispelling any such feeling. In any case, these photographs give the reader a chance to see the house in use by the people for whom it was designed, which is the only rational basis on which it should be judged. There may be sound reasons for the long-standing tradition that architectural photographs must never under any circumstances show a human being, but this reviewer, for one, is not convinced, and hopes that the present study marks a new trend.

The bulk of the book consists of "Twenty Houses for Family Living" (with not a family in sight), and this is followed by "Eight Adventuresome Houses," a section that will be of particular interest to those who are seeking hints of future trends. This section includes a house built like a covered bridge, another like a tepee, and another like a bubble, a house suspended from steel bents, one with 14′ cantilevers, and one built as three separate buildings.

Several architects, in addition to Franzen, are represented by their own houses. Outstanding are the houses designed for themselves by Quincy Jones and Frederick Emmons. This reviewer also particularly admired the houses designed by Bolton & Barnstone, Schweikher and Elting, Marcel Breuer, and the handsome entrance court to the house designed by Wurster, Bernardi and Emmons. The influence of Mies van der Rohe continues to grow, appearing even in such unexpected places as the house by Schweikher and Elting. This house is one of several which are planned around a court or make excellent use of carefully planned courts. Finally, this reviewer is again impressed by the disproportionate importance of landscaping, furnishings, and photography in published architecture. Several good architectural designs in this book are handicapped by deficiencies in one or more of those ancillary arts.

The editorial content is the same as the special house issue sent by ARCHITECTURAL RECORD to its subscribers in mid-May. Architects interested in houses who are not subscribers will want this book, as will that considerable section of the public which is seriously interested in the best in design.

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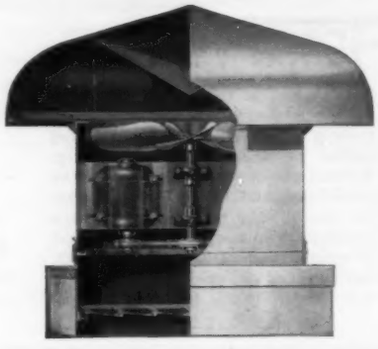

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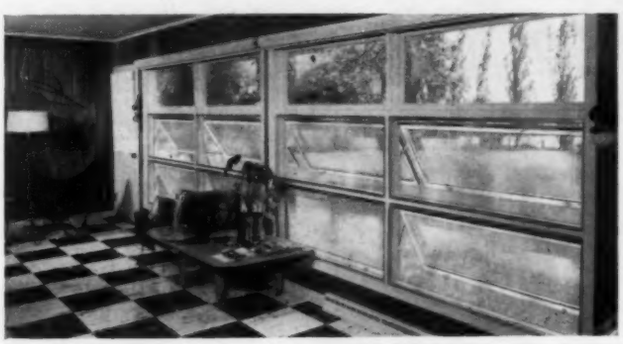

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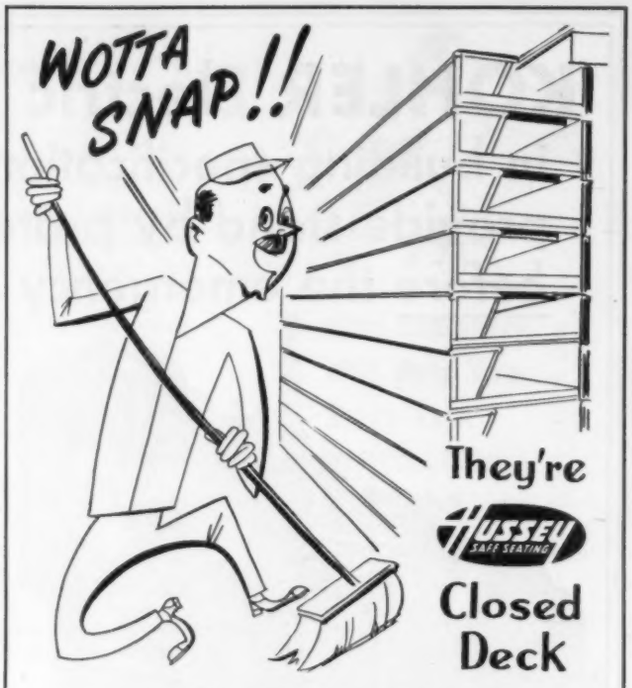

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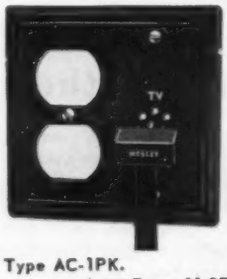

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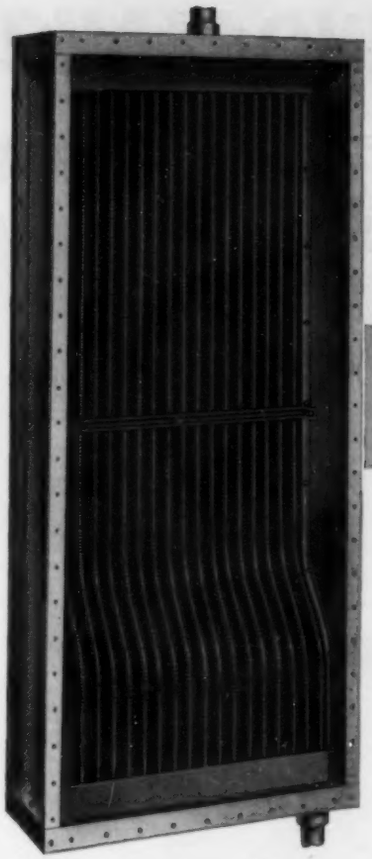

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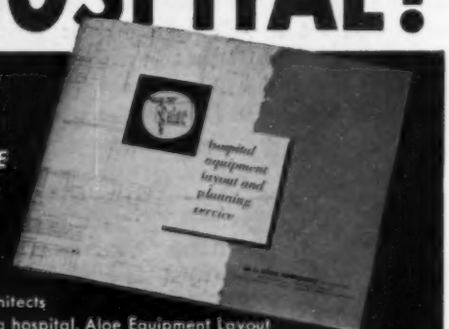

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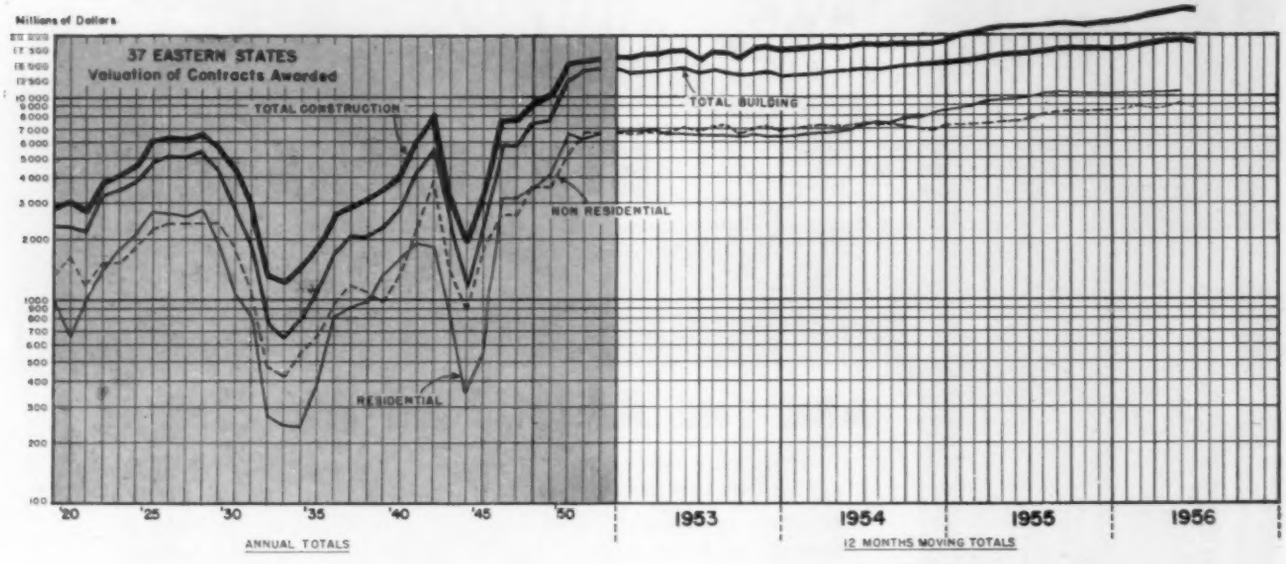


JUNE DIPS, BUT FIRST HALF IS BEST YET

June contracts awarded in the 37 eastern states fell three per cent below those for June of last year, F. W. Dodge Corporation reports. Awards totaled $2,197,815,000 this June. The decline was seen in nonresidential building, which at $794,272,000 was six per cent lower than in June 1955, and in residential contracts, which were down 13 per cent from a year ago with a total of $826,219,000 in awards. Heavy engineering contracts helped the overall total considerably with $577,325,000 in awards; this figure was higher than that for any June in Dodge's records, and was 25 per cent higher than June 1955. In spite of the June decline, however, a new record for the first half was set by the cumulative six-months total of $13,198,959,000 in contracts. All major categories of construction set records for the same period, with nonresidential awards up 11 per cent over 1955 at $4,607,682,000, residential awards up five per cent at $5,698,668,000, and heavy engineering awards up 21 per cent at $2,892,609,000.

Charts by Dodge Statistical Research Service

Source: F. W. Dodge Corporation

APARTMENT * BUILDINGS

Contracts Awarded—37 Eastern States

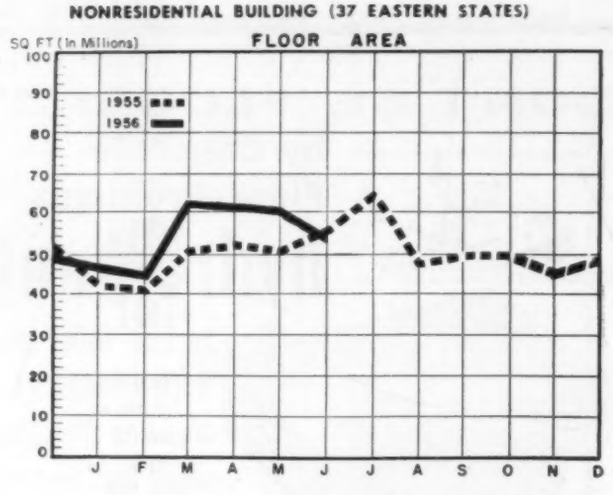
Number of Projects

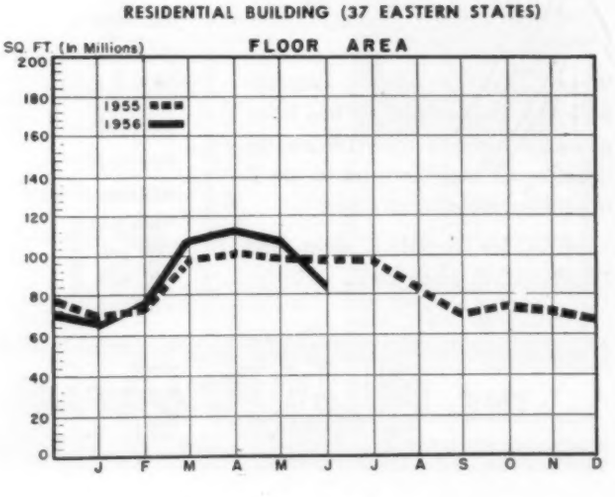
Year	Annual Total	Monthly Average	Year	Annual Total	Monthly Average
1929	8,108	676	1951	19,325	1,610
1935	3,647	304	1952	15,223	1,269
1943	24,114	2,010	1953	9,279	773
1947	11,003	917	1954	6,538	545
1950	15,554	1,296	1955	5,609	467

Monthly Totals

	1955			1956
Jan.	450	July	456	Jan. 636
Feb.	425	Aug.	582	Feb. 425
Mar.	552	Sept.	410	Mar. 497
Apr.	556	Oct.	379	Apr. 576
May	548	Nov.	351	May 819
June	478	Dec.	422	June 506
				Six months total—3459

* Multifamily Housing is the subject of Building Types Study No. 237, pp. 175–200.





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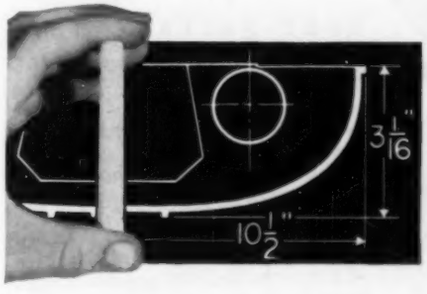

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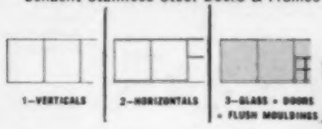

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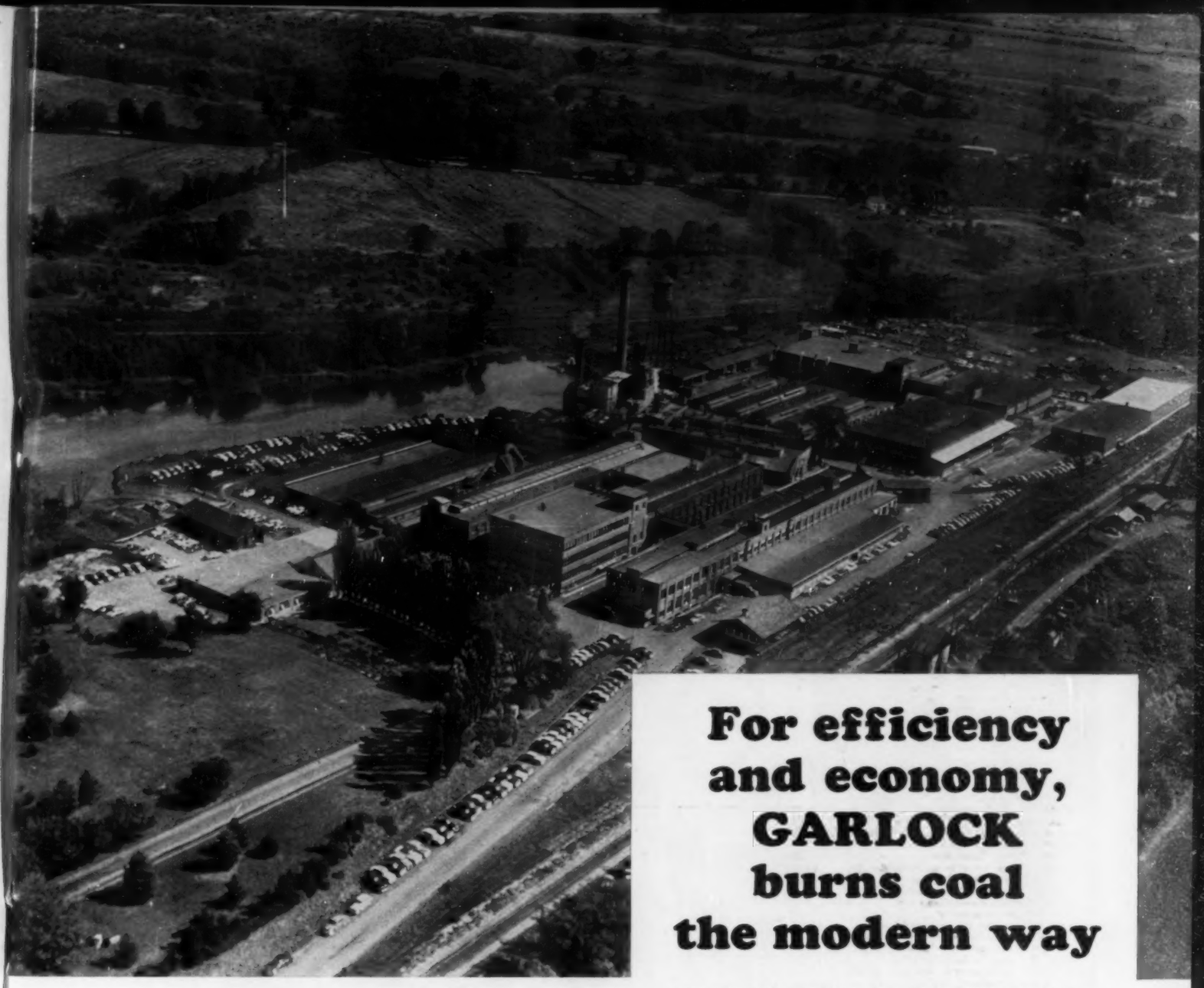

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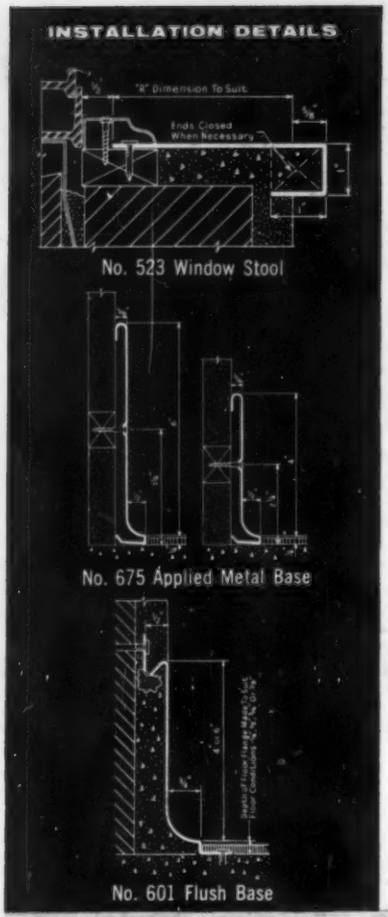

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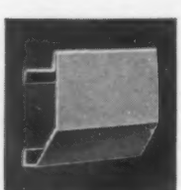
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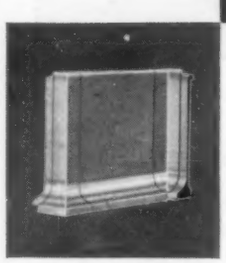
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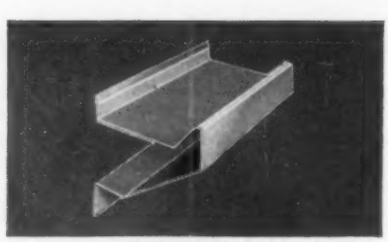
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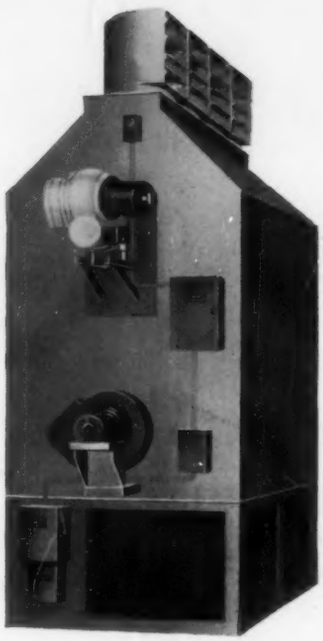

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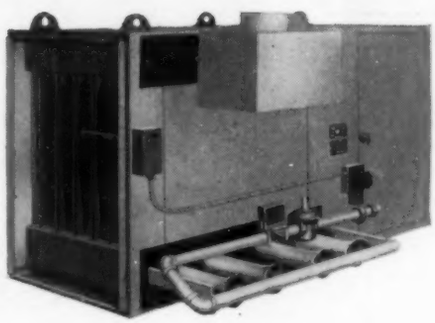

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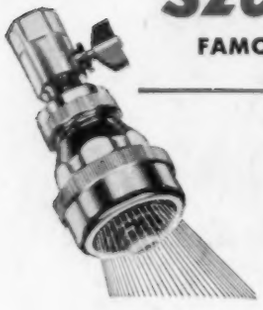

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